

# NURSING IN DISEASES

OF THE

## THROAT, NOSE, AND EAR

BY

MACLEOD YEARSLEY, F.R.C.S.

ASSISTANT SURGEON TO THE ROYAL EAR HOSPITAL; SURGEON-IN-CHARGE OF THE  
DEPARTMENT FOR DISEASES OF THE THROAT, NOSE, AND EAR, THE FARRINGDON  
GENERAL DISPENSARY; HON. SURGEON FOR DISEASES OF THE THROAT  
AND EAR, THE GOVERNESSES' HOME, ETC.

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Dedicated to

L.



## PREFACE.

THE articles which formed the basis of this little volume originally appeared in "*The Hospital Nursing Mirror*." They have been much added to, and, in great part, rewritten. Two short additional chapters on elementary anatomy and physiology have been placed with them, and both in these and in the other chapters it has been my endeavour, as far as possible, to render interesting and attractive to the nurse a special subject in which her training is often only too neglected.

M. Y.

33 WEYMOUTH STREET, W.,

October, 1899.



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## CHAPTER I.

### INTRODUCTION.

IN the present day, when our knowledge of medicine and surgery has so increased as to render specialism a necessity, and each system in the body has a literature of its own, the nurse must keep pace with the surgeon if the patient is to be adequately treated, and some knowledge of each speciality should therefore be included in her training if she wishes to be in a position to undertake any case at a moment's notice. If it be an eye operation, she should know something of ophthalmic nursing ; if it be a mastoid case, she should be acquainted with the methods of the otologist ; and when a nurse has to look after the instruments needed for an operation, she will find herself embarrassed if she has no knowledge of those particularly required for the manipulations of the specialist.

Just as no man can become a good specialist unless he has acquired a sound knowledge of general medicine and surgery, so is it impossible for the nurse to make herself efficient in the care of special cases unless she has been, in the first instance, well trained in the general principles of nursing. The management of mental cases, the care of fevers, of

patients who have undergone abdominal operations, or of gynæcological cases, have for some time past been recognised as branches of nursing which require special knowledge and aptitude, and the same may be said of ophthalmic nursing. Unless, however, a nurse has received some part of her training in a hospital devoted to diseases of the throat, nose and ear, her knowledge of the management of such patients (except, perhaps, of tracheotomy cases) is small indeed, for, just as otology, laryngology and rhinology are neglected in the curriculum of the student, so are they disregarded in the training of the nurse.

The object of this book, therefore, is to endeavour to remedy, at least in part, this defect in the instruction of nurses, and if it arouses a greater interest in the case of throat, nose and ear cases, it will not have been written in vain. The nurse who wishes to gain a further insight into the subject is strongly advised to take out a course of training at some special hospital, where she can obtain practical instruction, for theory, although a valuable aid to practice, is worth little without it.

It is taken for granted that the reader has already received training in elementary (general) anatomy and physiology and the principles of nursing, and it would therefore be beyond the province of this work to enter into those matters which are general to nursing. The making of beds, keeping of notes, temperature charts, etc., will not therefore be touched upon, except in their particular relations to the special subject under consideration. It is in such

matters as the application of medicaments to the ear or nose that the nurse is usually so lacking in knowledge ; even the simple operation of syringing is one that she seldom performs efficiently. The writer, when in charge of the ear department of a general hospital, was usually given a different nurse each week, and he was surprised to find that not one of them was able to syringe an ear properly, and as each one had consequently to be specially instructed, the help they afforded was hardly commensurate with the time spent in teaching them, especially as the number of patients to be dealt with single-handed was large, and often necessitated four hours' continuous work.

The reason for the lack of training in this special branch is easy to find. In many general hospitals there appears to be a curious dislike or distrust of specialists in these diseases, and an idea prevails that "any one can do ears". This has led to the placing of the ear department in the charge of a junior assistant surgeon—a policy which has greatly contributed to the formation of special hospitals. These special institutions, for whose existence the short-sighted action of the general hospitals is largely to blame, monopolise an enormous number of cases, which, if adequately treated at the latter charities, would have been invaluable as teaching material. As it is, a surgeon whose experience of the special department placed suddenly in his charge is practically *nil* can hardly be in a position to teach the subject either to students or to nurses.

## CHAPTER II.

### THE ELEMENTARY ANATOMY OF THE EAR.

IN the same way that the waves of light, acting through certain conducting media, produce their impression upon the special ending of the optic nerve, the waves of sound act upon the termination of the auditory nerve and produce the sensation of hearing. The special organ of hearing—the ear—is, therefore, like the eye, divisible into conducting and perceiving portions. The special endings of the auditory nerve are contained in a complicated apparatus—the *internal ear*—lodged in the temporal bone. The vibrations caused by sound are conducted to it through the *external* and *middle ears*. By reference to the accompanying diagram (Fig. 1) together with the following short description of these parts the reader should be enabled to form a sufficiently clear idea of the elementary anatomy of the whole organ.

The *external ear* consists of the *auricle* (the expanded portion which forms in animals and man the more or less prominent feature usually termed “the ear”) and the passage leading down to the drum and called the *external auditory meatus*. This passage is formed partly of cartilage, partly of bone and a slightly more detailed description thereof is

necessary that the nurse may become more competent in syringing or packing with dressing. It is a passage about one inch in length, and has the following direction: first forward, inward and upward; then backward, inward and horizontal; lastly, forward, inward and downward. Owing to certain anatomical peculiarities, the passage can be

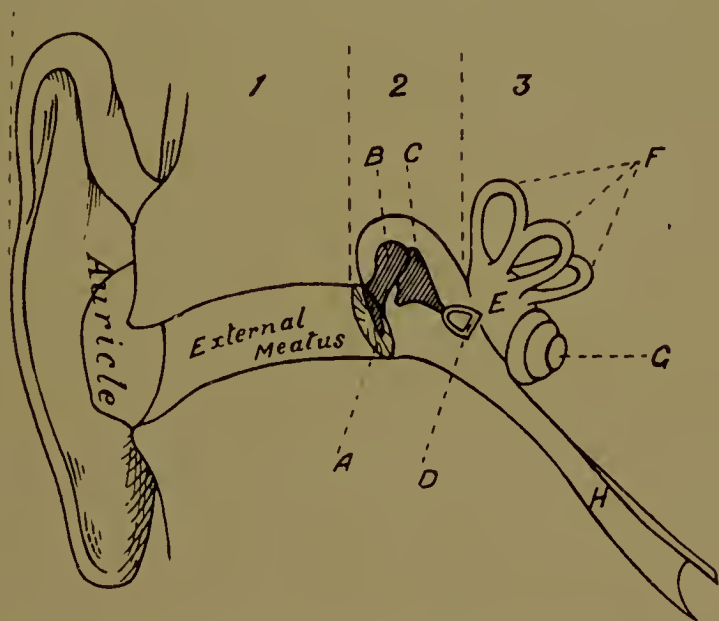


FIG. 1.—DIAGRAM OF THE EAR.

1. External Ear; 2. Middle Ear; 3. Internal Ear.

A. Tympanic Membrane; B. Malleus; C. Incus; D. Stapes fitting in oval window; E. Vestibule; F. The three semicircular canals; G. The Cochlea; H. Eustachean Tube.

straightened considerably by pulling the auricle upward and backward, a fact made use of in examining the ear with the speculum and in syringing.

*The middle ear*, tympanum or “drum,” is a chamber contained in the substance of the temporal bone. It is separated from the external meatus by a membrane (the *tympanic membrane* or “drum-

head") so formed anatomically as to be set in vibration to any sound, thereby differing from the parchment of a drum, which is so stretched as to be capable of vibrating to one note only. Opposite to this membrane is the inner wall of the tympanum, which is formed by the bony wall of the internal ear, pierced by two holes, the *oval* and *round windows*, which are, however, closed by membranes. Stretching between this wall and the drum-head is a chain of three small bones, the *malleus* (hammer), *incus* (anvil), and *stapes* (stirrup). The malleus is the outermost and is attached by its handle to the drum-head. The stapes is the innermost and fits by its foot-plate into the oval window. The incus forms the connection between the two.

Communicating with the tympanum behind is a large air chamber called the *mastoid antrum*. From the front a tube passes downward, inward and forward to the throat; this is the *Eustachian tube*, by means of which the pressure of air in the tympanum is kept equal to that on the other side of the drum-head. Unless the pressure of air is the same on each side of the drum-head the latter cannot properly vibrate.

Behind the auricle can be felt a hard part of bone from which the large muscle (*sterno-mastoid*) at the side of the neck springs; this is called the *mastoid process* and contains the mastoid antrum referred to and a variable number of air cells.

*The internal ear* consists of a cavity of somewhat complicated shape in the substance of the temporal bone, enclosing a membranous bag in which are the



terminations of the nerve of hearing. These terminations are bathed in a fluid called the *endolymph*. Surrounding this membranous bag is another fluid termed the *perilymph*. The internal ear consists of three portions: the *semicircular canals*, which have to do with the sense of equilibrium; the *cochlea*, and a chamber called the *vestibule*, with which the other two parts communicate. The cochlea is in shape like a snail's shell and contains the nerve-ending (*the organ of corti*) which is especially concerned with the sense of hearing.

#### *Physiology.*

Waves of sound enter the external meatus and, striking upon the drum-head, set it vibrating. This vibration is communicated to the chain of small bones—from the malleus through the incus to the stapes. By the movements of the stapes in the oval window the vibrations pass to the perilymph, thence through the membranous internal ear (or *labyrinth*) to the endolymph, by which they directly affect the nerve-endings in the cochlea. The sensations to which this gives rise are conducted by the auditory nerve to the brain, where they are perceived and interpreted.

*Note.*—This short account of the anatomy and physiology of the organ of hearing is not intended to be other than strictly elementary; many points which might only serve to puzzle the reader are therefore purposely omitted.

## CHAPTER III.

### THE ELEMENTARY ANATOMY OF THE NOSE AND THROAT.

#### THE NOSE.

THE nose serves a two-fold function ; it forms a portion of the respiratory apparatus by which the air breathed is warmed, moistened, and relieved of gross impurities, and it also contains the special terminations of the nerves of smell. That portion of the organ which forms one of the principal features of the face is formed of a framework partly cartilaginous, partly bony ; the nostrils lead into the nasal chambers proper, the part immediately inside being termed the *vestibule* (Fig. 2). The vestibule is furnished with coarse hairs (*vibrissæ*) which act as a filter to the entering air.

The nasal chambers proper are two, separated by a partition (*septum*) formed of bone and cartilage, and extend from the nostrils (*anterior nares*) backward to the upper part of the pharynx (*naso-pharynx*) with which they communicate by two apertures (*posterior nares* or *choanæ*). The *roof* of the nose is formed by the floor of the brain cavity, the front part being pierced by delicate holes (*cribriform plate*) through which pass the nerves of smell. The *floor* is formed by the hard palate. On the outer side of each nasal chamber are three delicate



scrolls of bone, placed one above the other, the uppermost being small and placed far back. These are the *superior, middle, and inferior turbinate bones*, and the spaces between them are called respectively

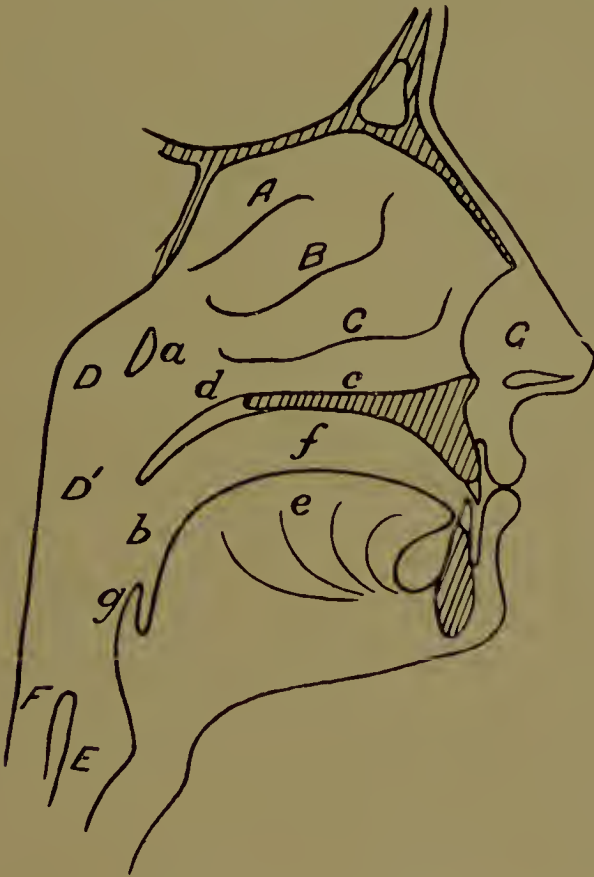


FIG. 2.—DIAGRAM OF THE NOSE AND PHARYNX.

A, Superior, B, Middle, C, Inferior Turbinal; D, Nasopharynx; D', Pharynx; E, Larynx; F, Esophagus; G, Vestibule. a, Opening of Eustachean Tube; b, Opening of Fauces; c, Hard, d, Soft, Palate; e, Tongue; f, Cavity of the Mouth; g, Epiglottis.

the *superior, middle, and inferior meatus*, the last named being between the inferior turbinate and the floor. The turbinate bones are covered by mucous membrane, that on the middle and inferior being

capable of considerable distention by blood, an arrangement whereby the incoming air is warmed. The superior turbinate has spreading on it the nerves of smell, and has, therefore, to do with that sense.

Besides the above features, the nasal chambers communicate with important air cavities called the *accessory sinuses*. These are on each side (1) the *frontal sinus* in the forehead, (2) the *maxillary sinus* or *antrum of Highmore* in the cheek, (3) the *ethmoidal sinuses* in the upper part of the nose, and (4) the *sphenoidal sinus* in the back part of the roof. Each nasal chamber also communicates by the *nasal duct* with the *lachrymal sac* of the eye, whereby the excess of tear secretion is drained away.

### *Physiology.*

*Respiratory.* The nose is, beyond all doubt, the proper channel for the entry of air into the lungs. By its passage over the turbinate bones it becomes sufficiently warmed and moistened to prevent it from irritating the delicate mucous membrane of the other organs concerned in respiration. And here a word may be said with advantage as to the absurd, unphysiological and pernicious habit of wearing a "respirator". If the wearer breathes naturally through the nose the covering to the mouth can serve no good purpose. If he breathes through the mouth it cannot possibly either warm or moisten the air. The only thing it can do in such a case is to catch and retain all the impurities of the outgoing air, and so afford them an easy means of contaminating the incoming air.

*Olfactory.* The upper part of the nose only is concerned with the sense of smell. Odorous particles, conveyed thereto by *sniffing*, stimulate the special endings of the olfactory nerves, so setting up an impulse which is conveyed to the brain and there interpreted.

### THE THROAT.

The part popularly known as “the throat” consists of the *pharynx* and *larynx*. (See Fig. 2.)

The *pharynx* is the space lying behind the nose and mouth and which can in part be seen when the latter is widely opened. It is common to both the respiratory and digestive systems. The upper part situated behind the posterior nares is known as the *nasopharynx*. Into the pharynx are the following openings: above and in front, the two posterior nares; at either side the two Eustachian tubes; about the middle and in front the mouth; below, the *œsophagus* (gullet) and *larynx*, the latter in front of the former. The situation of these openings is indicated in Fig. 2.

The opening of the mouth into the pharynx is somewhat square and is bounded above by the *soft palate* and *uvula*, below by the base of the *tongue*, and on either side by the *pillars of the fauces*. The faucial pillars are *anterior* and *posterior*, and between them is lodged the *tonsil*.

### THE LARYNX.

The *larynx* is a triangular-shaped box formed chiefly of cartilage and acted upon by certain

muscles. It is placed at the commencement of the *trachea* (or windpipe) and contains within it the essential organ of voice. This consists of two bands of tissue stretched from front to back of the larynx and capable of alterations in tension by the action of various small muscles. These bands are the *vocal cords*, the framework of the larynx being composed of several cartilages articulated with each other; the tension of the vocal cords is altered by the muscles moving the cartilages upon one another.

Above and in front of the larynx, at the base of the tongue, is a leaf-like fold of elastic cartilage, called the *epiglottis*. This shuts down over the larynx like a lid upon a box and prevents the entrance of foreign bodies during the act of swallowing.

The two large cartilages which form the framework of the larynx are called the *thyroid* and *cricoid* cartilages, the former being superior in position to the latter, and forming the prominence on the front of the neck known as *Adam's apple*. The small space between them in front is filled in by a membrane called the *crico-thyroid membrane*.

#### *Physiology.*

*Voice* is produced by the vibrations of the approximated vocal cords, set in motion by the passage of a blast of air.

*Speech* is produced by modifying the voice arising in the larynx by changing the form of the cavity of the pharynx and mouth by means of the tongue and lips.

## CHAPTER IV.

### GENERAL INSTRUCTIONS.

IN the treatment of diseases of the throat, nose and ear there are numerous small duties which the nurse may at any time be called upon to perform, and upon which the efficacy of the methods employed may largely depend. Besides these manipulations, every nurse should be acquainted with the instruments required by the specialist for conducting his examinations, and with these it will be best to begin.

In hospitals the source of light does not concern the nurse; suitable lamps—electric, gas or oil—will be supplied, but in private houses she should see that there is a good oil lamp with an efficient reflector prepared for the surgeon's use. A head mirror, mounted on a head-band or spectacle frame, is also required to throw the light into the part under examination, and in the examination of the *ear* the following instruments should be at hand: watch and measure, acoumeter, tuning-fork, Galton's whistle, specula, Siegle's pneumatic speculum, probes, forceps, Politzer's or Gruber's bag, Eustachian catheters, diagnostic tube. In special hospitals a watch is usually kept specially for testing the hearing power, the distance at which it is heard by a normal ear being known. The nurse should see

that this is kept regularly wound and that a measure is placed with it (a rigid foot-rule of metal is the most useful form). The acoumeter (Fig. 3) is a

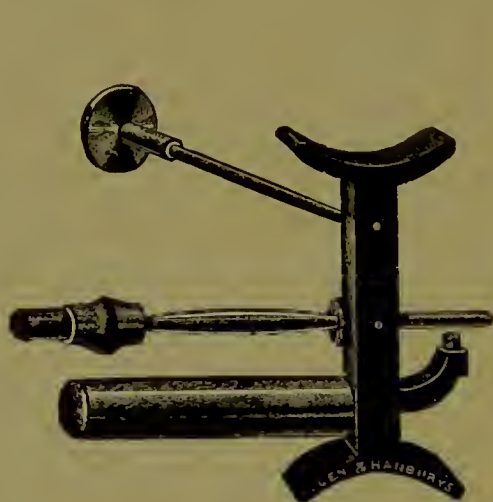


FIG. 3.



FIG. 4.



FIG. 5.

little instrument by means of which a sharp click is made by the falling of a steel hammer upon a rod of the same metal. The tuning-fork generally used is what is known as a "Gardiner Brown" fork



FIG. 6.

(Fig. 4). This instrument is mounted on a foot, between which and the fork is a thumb-plate. A variety of other forks are used for special cases.



Galton's whistle (Fig. 5) is a small whistle, sounded by a hand-ball, in which the length of the barrel can



FIG. 7.

be graduated by means of a screw piston. Of ear specula there is a large variety; those most com-



FIG. 8.

monly used are the plated or silver funnel-shaped ones here figured (Fig. 6). The cumbersome

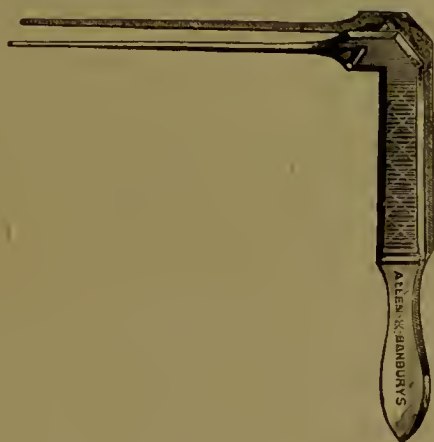


FIG. 9.

apparatus known as "Brunton's otoscope" is now

obsolete. The Siegle's pneumatic speculum (Fig. 7), an exceedingly useful little instrument, consists of

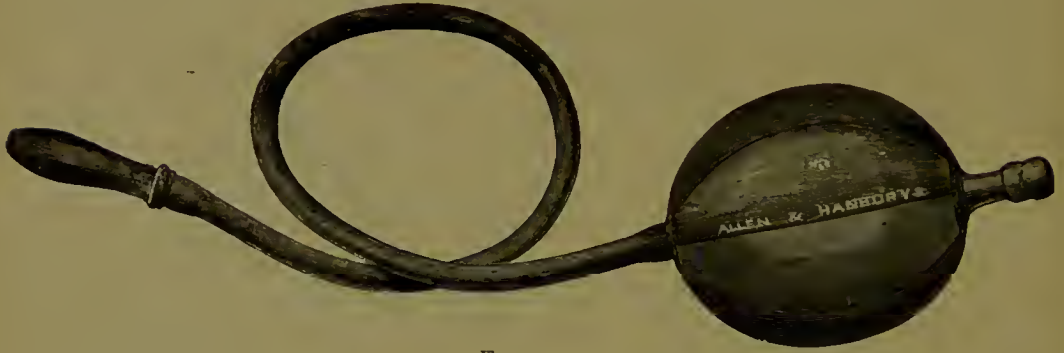


FIG. 10.

a vulcanite speculum screwing into an air-tight chamber, one side of which is formed of plain glass or a lens; from the chamber leads a tube ending in



FIG. 11.

a mouth-piece, or, better, a small hand-ball. Ear probes are of various shapes; a valuable form is Hartmann's (Fig. 8). Blunt-pointed whalebone

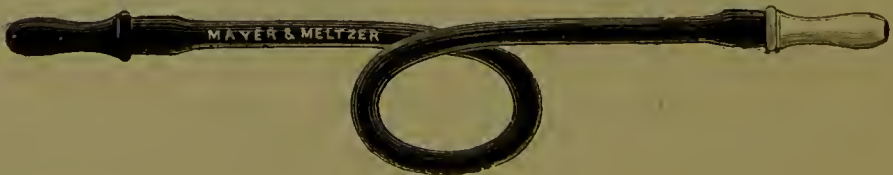


FIG. 12.

probes are very useful as cotton-wool holders. Forceps are, again, of varying shapes, from simple angular bow forceps (Fig. 9) to more complicated forms working on the scissors plan.



An important instrument, both from the diagnostic and the therapeutic points of view, is the air douche, by means of which air is blown into the Eustachian tube and the tympanum ventilated. The air douches usually employed are all modifications of the form

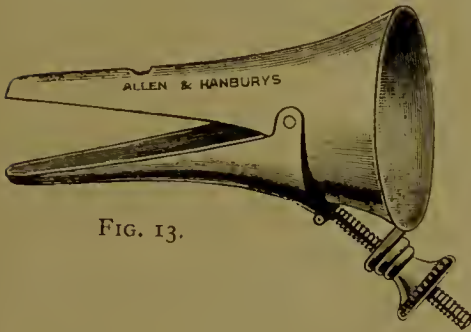


FIG. 13.



FIG. 14.

known as Politzer's, consisting of a hand-ball with a capacity of from four to six or eight ounces, attached to a tube ending in a hard or soft single or double nozzle (Fig. 10). Gruber's bag ends in

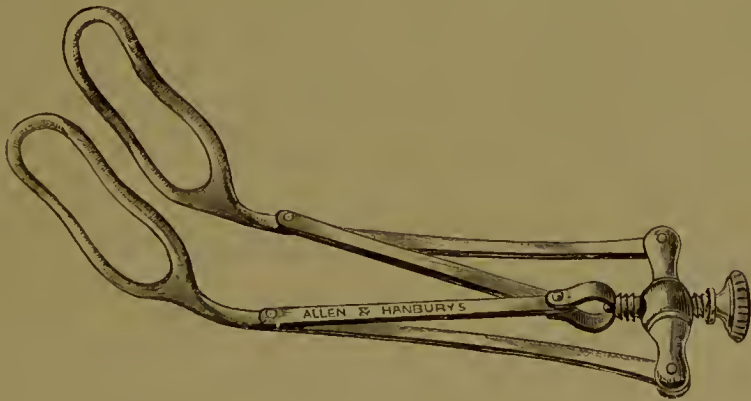


FIG. 15.

a metal Eustachian catheter instead of a nozzle. Eustachian catheters (Fig. 11) scarcely need description; they are made in vulcanite or metal. With them should be placed a hand-ball for driving air through them, and a diagnostic tube, which

consists merely of a tube of soft rubber, ending in nozzles of wood, bone, ivory or vulcanite, for insertion into the ears of the surgeon and patient respectively (Fig. 12).

For the examination of the nose the surgeon will require specula, posterior rhinoscope, forceps, probes.

Of nasal specula there are several patterns, the best known being Duplay's (Fig. 13), Thudichum's

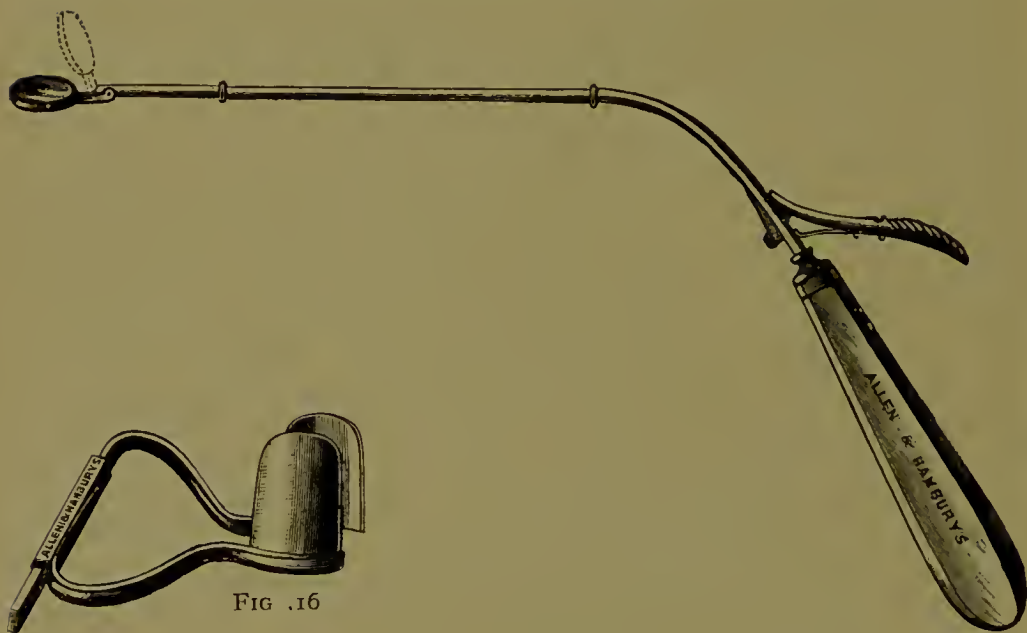


FIG. 16

FIG. 17.

(Fig. 14), Frankel's (Fig. 15), and Lennox Browne's (Fig. 16). These are in such frequent use that the nurse should lose no time in distinguishing them. The posterior rhinoscope is a small mirror for examining the nasopharynx through the mouth. There are various special forms, but many special surgeons prefer to use a small laryngeal mirror as more simple and consequently more suitable. Michel's posterior rhinoscope (Fig. 17) has the

mirror hinged so that its angle can be altered at will. Some form of tongue depressor is required in conjunction with the posterior rhinoscope, and at times a palate hook is necessary. It is as well that the nurse should make herself acquainted with

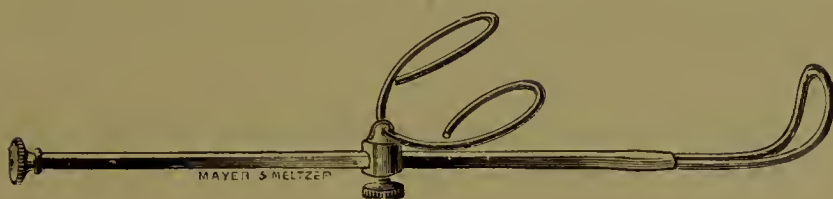


FIG. 18.

Baber's palate hook (Fig. 18) in case she is asked to hand it to the surgeon. It consists of a hook at the end of a straight rod, which is fastened in position by a pair of wire loops lodging in the nostrils and capable of sliding along the rod for adjustment.



FIG. 19.

Forceps and probes for the nose are of various forms, but no special description is needed.

In the examination of the throat and larynx a tongue depressor, tongue cloths, and laryngeal mirrors are required. Perhaps the most frequently used tongue depressor is Frankel's (Fig. 19).

Laryngeal mirrors (Fig. 20) scarcely need description, they are so well known that the nurse is probably quite familiar with them. As tongue cloths, small squares of old linen, measuring about six inches by four, may be provided in sufficient number to allow of at least one to each patient. They are for the holding out of the tongue by the laryngologist when using the laryngoscope. The Japanese paper tongue holders used at some hospitals are useful, as they can be burnt after use and are very cheap.

A bowl of 1 in 40 carbolic or other antiseptic and a towel must not be forgotten, and, where electric light is used, a spirit lamp for warming mirrors, etc.



FIG. 20.

*Arming probes with cotton-wool.* This is a duty that the nurse is frequently called upon to perform, and the author would advise her to practise herself in doing it until she can manage to arm a probe well and firmly enough to prevent the wool coming off at the first touch and yet sufficiently loose to admit of its removal, when soiled, without difficulty. Special probes are made for the purpose with slightly roughened ends. (The author prefers to use the ordinary whalebone probe.) In arming probes a small piece of cotton-wool should be pulled out evenly and held lightly between the left forefinger and thumb. The probe, held by the same digits of the right hand, is laid upon one corner of the wool,

which, being steadied by the left thumb and fore-finger, is wrapped round the end of the probe by a rolling motion of the latter. There is a certain "knack" in doing this properly, but a little practice will quickly make one expert.

*Care of instruments.* The nurse should take care to keep the instruments described above scrupulously clean. Eustachian catheters, when of vulcanite, should be syringed through with 1 in 20 carbolic lotion and cleared by passing a wire through the bore. If of metal they should be boiled in a solution of bicarbonate of soda. The bore requires drying afterwards, in metal catheters, by passing them rapidly two or three times through the flame of a spirit lamp, in vulcanite ones by blowing air through them with the inflating hand-ball. The nozzles of air douches should be cleaned with 1 in 20 carbolic, as also those of the diagnostic tube; care must be taken that the latter do not become clogged with wax, etc. All instruments should be cleaned immediately after the surgeon has finished his work; a nurse who takes any pride in her work should see that everything is clean and put away before going off duty.

In passing on to those methods of treatment in the proper execution of which the nurse can be of assistance, the necessity for thoroughness, combined with the utmost gentleness, cannot be too strongly impressed upon the reader. The ear, the throat and the nose are organs of exquisite sensitiveness, and any roughness of manipulation not only disturbs the patient's confidence but defeats the object in

view, and one cannot cultivate a more useful attainment than a gentle and delicate touch.

The most common duty the nurse is called upon to undertake is that of *syringing the ear*. Simple proceeding as this is, it is curious how comparatively few individuals are adept at its practice. There is a "knack" about it not always easily caught at first, but which once acquired is never lost. Instructions are not, therefore, out of place, and no apologies will be made for them. The patient should be seated with the ear to be syringed opposite a good light. A towel is placed on the shoulder and tucked into the collar. A bowl, kidney-shaped for preference (the conical glass receptacle introduced by Gardiner Brown is very useful), is held under the ear against the neck by the patient himself, and if he does his part properly there is no need for the ear spouts or more complicated arrangements which have been devised. The nurse then seizes the tip of the ear with the left thumb and forefinger, pulls it gently upward and backward to straighten the canal, and introduces the nozzle of the syringe into the opening. The point of the nozzle must not be directed straight inward but towards the roof of the meatus, so that the fluid washes over the sensitive drum-head, and does not impinge directly upon it. No force need be applied whatever, but the contents of the syringe may be made to flow in gentle jerks. After syringing, the ear is dried with a soft towel, and the nurse should show the surgeon anything that has come away from the ear. It is not advisable to use plain water for syringing, water which has been sterilised



by boiling, or boric acid lotion, carbolic (1 in 40), or corrosive sublimate (1 in 2000) should be employed. Whatever fluid is used it must be made *comfortably warm*, on no account should it be used cold or but slightly warm.

The troubles for which the nurse may be asked to syringe are cerumen ("ear-wax") or discharges from the ear. If she follows the instructions just given she should have no difficulty in removing the former, as the fluid, passing along the roof, washes out the plug of wax from behind. After wax has been removed the patient should not be allowed to go away without a small plug of cotton-wool in the ear. In syringing for pus a very gentle stream should be used. Should syringing cause any giddiness the surgeon should be at once informed and the greatest care and gentleness exercised; indeed the nurse should bear in mind that the first syringe-ful should be used *most carefully* and not forcibly fired down the meatus, as a patient may drop off the chair from sudden vertigo from syringing when the nurse least expects it.

Finally, it should be remembered that patients cannot syringe their own ears with any success. Syringes of complicated shapes are made (for the profit of chemists and instrument makers), which are generally useless. Patients who are ordered to have their ears syringed at home should be informed that they must get some relative or friend to carry out the procedure, and they should be directed to obtain a two-ounce glass syringe with a straight nozzle. If possible, the relative should be personally instructed

by the nurse. Sometimes the upper part of the tympanum (*attic*) requires special syringing. This is done by the surgeon himself with an *attic cannula* or syringe (Fig. 21).

*Instillations.* In making local applications to the ear, instillations or "drops" are very frequently employed. They should be applied as follows: The patient lies upon his side, with the ear to be instilled uppermost. The drops, diluted, if necessary, and properly warmed, are poured into the ear and retained (by the patient's position) for eight to ten minutes. A ready method is to use a tea-spoon, in which the instillation can be easily warmed over the

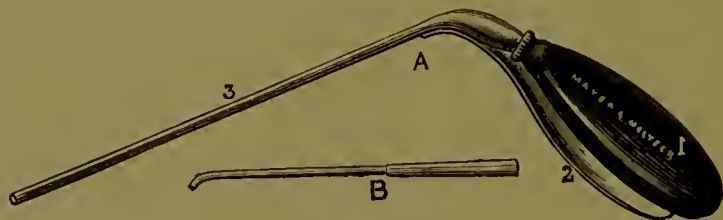


FIG. 21.

flame of a spirit lamp, and from which it can be poured into the ear. A better method of warming, and one always to be employed when the instillation used is one of alcohol, is to place the bottle containing it in hot water, the stopper having previously been removed. Should the alcohol require dilution, the water added should be hot. On no account whatever should drops be used cold. When the instillation has been retained a sufficient time a pad of wool is placed over the ear to soak up any excess of the fluid as it runs out of the canal when the patient rises. When applying an instillation after syringing the ear should always be carefully dried by means of



a wool-armed probe before instilling. Should any difficulty be encountered in making the drops enter the ear, a small pipette should be used to introduce them, and, when they have entered, the tragus (the small projection just in front of the opening of the canal) should be pressed inwards once or twice with the tip of the finger. This should always be done when using cocain or eucain for purposes of local anæsthesia.

Of other duties which the nurse may have to perform the application of blisters, heat, cold, or leeches, and packing the ear with antiseptic gauze are the most important.

*Blisters* are applied behind the ear over the mastoid process. The skin should first be cleansed with a little ether or ammonia to remove any fatty material, and then an area about the size of a shilling painted with *Liquor Epispasticus*; one layer is sufficient. When the blister rises it should be treated in the ordinary way.

*Heat* may be applied to the ear in a variety of ways. Poultices are not advisable, as they may cause severe inflammation (perichondritis) of the auricle. Should the surgeon order them, however, they should be made very small, just large enough to fit into the meatus, and then the whole ear covered with a big pad of cotton-wool. Dry heat by means of a large pad of hot cotton-wool, or of hot flannel covered by wool and secured by a bandage, is the best method to employ; the domestic "bran-bag" is another very excellent means. Heat may also be applied by Leiter's tubes or by instillations of sterilised water as hot as can be borne.

*Cold* may be applied by means of an ice-bag, but Leiter's tubes are more convenient and effective. Evaporating lotions are not adapted for application to the ear.

*Leeches* form a very valuable means of treatment. Although the method of their application belongs rather to nursing in general, so many persons seem to be ignorant thereof or wanting in experience that the following directions may be of use to the reader. The part of the skin selected for the application of a leech should be washed and then dabbed over with milk. The leech should then be taken from its box or bottle and allowed to swim for a few minutes in a basin of clean water, and before being applied should be allowed next to crawl over a clean towel for a few minutes. It should then be taken up in a clean test-tube or a wine-glass, which is inverted and placed over the spot selected. It may be some time before the leech can be got to fasten, but when it has once taken hold it should be left to drop off when distended. The spots to which leeches are usually applied in aural surgery are—(1) in front of the tragus, (2) the mastoid process, (3) occasionally beneath the ear.

*Packing.* Occasionally the nurse has to pack the ear with antiseptic gauze. This should be done with double cyanide gauze, cut in strips from six to twelve inches long and half to one inch broad, soaked in 1 in 40 carbolic. One end is seized with a pair of aural forceps and gently passed into the meatus to the bottom, the auricle being pulled backward and upward at the same time; the remainder

of the gauze is gently packed in, not too tightly, and the end curled up and lodged in the concha (or hollow of the ear). A pad of gauze, covered by a pad of wool and secured by a bandage completes the dressing.

Passing now to the Nose and Throat the nurse may have to assist in applying various external therapeutic measures to the latter, similar to the applications used in other regions, and which need no special description—leeches, blisters, paints, compresses, poultices, etc. *Cold* is used by means of narrow ice-bags, cold compresses frequently changed, or by Leiter's tubes. Leiter's tubes are useful for applying both heat and cold ; for the latter a temperature of 55° Fahr. suffices.

For the application of fluids to the interior of the nose, sprays, atomisers, douches or syringes are used. Sprays are worked by a double hand-ball and are applied to the anterior nares or to the post-nasal space. The former is more frequently used, as, properly applied, it will reach the posterior nares efficiently. Leffert's directions for using the nasal spray are valuable and practical. I cannot do better than repeat them here. (1) Warm the fluid in the bottle by holding the latter for a few minutes in hot water ; (2) let the body be held erect, the head very slightly inclined over a basin ; (3) introduce the nozzle of the spray into the nostril, first into the one most obstructed, far enough to close it perfectly, holding the tube of the apparatus directly outward from the face without inclining it to one side or downward. (4) Let the mouth be widely opened,

breathing gently through it in a snoring manner, and avoiding all attempts at speaking, swallowing, or coughing. The impulse to cough when the fluid passes into the upper part of the throat must be resisted, and it will pass into the opposite nostril. (5) The ball of the spray must be firmly grasped in the right hand and briskly worked until the fluid appears at the opposite nostril. (6) The nozzle must then be removed, and the superfluous fluid allowed to run out, the nose being blown gently, never vigorously. (7) The spraying should then be repeated upon the opposite nostril.

In spraying the pharynx the tube, preferably with a tongue depressor attached, should be introduced well into the mouth, and the spraying done by degrees to allow the patient to rid himself of the superfluous fluid.

Nasal douches are better used by the patient himself, but syringing may be done by the nurse. The syringe used may be an indiarubber hand-ball syringe (best with a nozzle of the same material) or an ordinary Higginson's syringe. In using this method of cleansing the nose the following directions should be studied: (1) Warm the fluid. (2) Use no force. (3) Let the head be kept upright or inclined slightly forward. If the head be thrown too much forward or back the fluid may enter the frontal air sinuses or the Eustachian tubes with bad results. (4) The patient should breathe through the mouth, and avoid swallowing or coughing. (5) Syringe through the side which is most obstructed. (6) When first beginning do not use more than

half a pint; at subsequent applications more may be employed. (7) Clear away superfluous fluid by *gently* blowing the nose.

In syringing, spraying or douching the nose it is of great importance to remember that the direction of the nasal passage is *straight backward*, by syringing in an upward direction the fluid strikes the roof of the nose and its object of completely cleansing the nose is not only thus defeated, but much pain and subsequent headache is caused to the patient.

*The post-nasal douche.* This can be very well given by means of an ordinary Higginson's syringe with a metal Eustachian catheter instead of the usual nozzle. The end of the catheter is introduced behind the soft palate, the patient leaning the head slightly forward and keeping the mouth open. The douche should be given gently and frequent pauses made to allow of the patient breathing.

*Gargles*, except by the method of Guinier, are not so frequently used as formerly, and the nurse need not concern herself with them.

*Inhalations* form a valuable method of locally treating diseases of the throat. They are best employed by means of a Maw's inhaler (Fig. 22). The water used should be at a temperature of 140° Fahr. If an inhaler be not at hand, the treatment can be carried out with an ordinary jug. The jug should be about half full of water at the temperature named, and a folded towel arranged about its top in such a manner as to be adapted to the patient's nose and mouth. The inhalation should be continued for



about ten minutes, the patient taking one breath of fresh air to every three or four of the vapour.

In *painting the throat* brushes should be discarded as uncleanly and inefficient. A pledget of cotton-wool firmly held in a pair of bent catch-forceps should be dipped into the pigment and carried rapidly through the open mouth to the back of the throat, which should be quickly and thoroughly swabbed.



FIG. 22.

A few words upon the preparation and cleansing of sponges may be of value to the reader. New sponges should be repeatedly washed in hot water, dried and beaten until the sand is shaken out. Some prefer to rid them of the sand by steeping them in 8 per cent. solution of hydrochloric acid. After being thus prepared they should be stored in 1 in 20 carbolic and are then ready for use. When

sponges have been used for some time at an operation, they should be treated as follows: (1) Free them from grease by soaking in a concentrated solution of washing soda; (2) next soak for twenty-four hours in permanganate of potassium, gr. i. to  $\bar{3}$  i.; (3) wash in clean water; (4) soak in 1 per cent. solution of subsulphite of soda with 8 per cent. of pure hydrochloric acid until they become white (which takes about fifteen minutes); (5) wash in water till scentless and store in 1 in 20 carbolic.

## CHAPTER V.

### OPERATIONS ON THE NOSE AND NASOPHARYNX.

THE preparation of patients for operations upon the nose and nasopharynx needs but few remarks. Their general preparation does not differ from that for other surgical operations, with the essential principles of which it is presumed the reader is well acquainted from her training as a general surgical nurse.

These operations may be divided into three groups: (1) those upon the nasal cavities; (2) those in the accessory sinuses, and (3) those in the nasopharynx.

1. Operations upon the nasal cavities are done either upon the septum or the turbinal bodies, or for the removal of new growths or foreign bodies. They are performed mostly through the natural passages, but it is at times necessary to considerably extend the operation in order to afford more room to the operator.

Many of the smaller operations are done in the consulting room, and scarcely require the additional services of a nurse; among these minor procedures being the application of the galvano-cautery, the



removal of spurs, small hypertrophies, etc. Little need therefore be said concerning them, but a word or two with regard to the preparation of the galvano-cautery, or the threading of snares may not be amiss. A nurse who takes an intelligent interest in her work, who is quick and observant and understands the little details of these small things is of much value to the specialist in his out-patient room. It saves him much time and trouble to have his cautery, snares, etc., prepared for him, and he is able to get through his work the quicker for such help. Most hospitals now possess the electric light, and are fitted with



FIG. 23.

rheostats or transformers to utilise the current from the main for the cauteries. The nurse should ask to be shown the working of these apparatus; to enter into it here would be beside the province of this work and would take up too much space. The handle used as a rule for galvano-cautery work is Schech's (Fig. 23), and to it may be fitted various cautery points or a snare. When asked for the galvano-cautery, the nurse should inquire of the surgeon the kind of point he wishes fitted, and when it is arranged she should test it before handing it to him. The heat used should be sufficient to make

the point a cherry-red colour, anything stronger is too intense and causes pain and hæmorrhage. When finished with, the cautery is cleansed by simply switching on the current and burning away any tissue, etc., attached to the point.

Snares should always be fitted ready with wire before the surgeon commences work, and when they have been used, fresh wire should be fitted with as little delay as is compatible with the purification of the instrument.

In removing spurs, various forms of instruments are used, the commonest being, perhaps, Bosworth's saw (Fig. 24) or some modification thereof. For

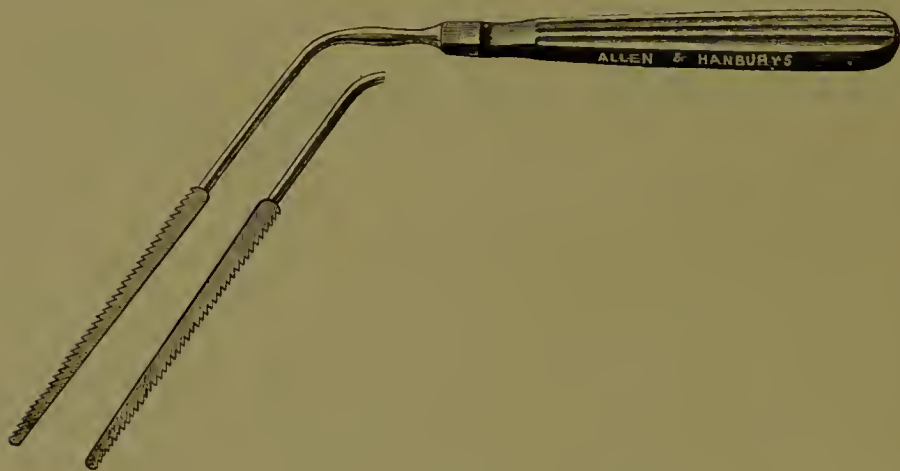


FIG. 24.

removal of hypertrophies from the turbinal bodies, nasal scissors, the snare, cutting forceps, or Carmalt Jones' turbinotome or "spokeshave" (Fig. 25) may be required. As the bleeding in these operations is nearly always very profuse, one of the nurse's most important duties is to see that the patient is properly prepared with towels or mackintosh sheeting to prevent the soiling of his clothes. Plenty of cotton-

wool should be at hand as well as armed probes. When the surgeon is finished he may require to plug the nose, and for this strips of double cyanide gauze soaked in 1 in 40 carbolic should be ready for him, with forceps and probe to adjust them. These strips should be about twelve inches long by half to one inch broad, and, as such plugs are constantly employed both in nose and ear work, it is well that a large stock should be kept in 1 in 40 carbolic ready for use. Instead of plugging the nose with gauze, however, the author now uses, as do most of his colleagues at the Royal Ear Hospital,

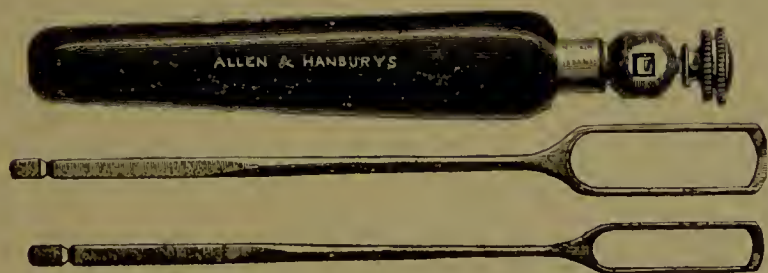


FIG. 25.

the splints of soft red rubber introduced by Mr. Richard Lake.<sup>1</sup>

When these operations are performed under the local anæsthesia produced by cocain or eucain, the drug is usually applied by the surgeon himself either by the spray or on cotton-wool. The latter method is more precise and effective and is done by arming a whalebone probe with a spindle of cotton-wool about an inch and a half to two inches in length. This is dipped into the anæsthetic and passed into the nasal passage, where it is steadied by the forceps whilst the probe is withdrawn.

<sup>1</sup> *The Journal of Laryngology*, August, 1898, p. 386.

Passing now to operations under general anæsthesia, the patient should be prepared as for any general surgical operation. It must be borne in mind that in nearly all operations on the nasal cavities the hæmorrhage is free, and the nurse should see that there are always plenty of cotton-wool swabs, hot water, etc., at hand. A square of mackintosh sheeting and three or four towels, soaked in 1 in 20 carbolic, should also be ready. If the patient be a woman, it is well that her hair should be done up in a secure and compact coil, and well covered with a waterproof bathing cap or towel, adjusted turban-wise, before the operation. Attention to this small precaution saves much trouble afterwards in cleansing blood-soaked hair. Other preparations for operation are much the same as in any surgical proceeding; there should be plenty of bowls, the instruments should be placed ready in a flat tray, needles, pressure-forceps, snares, and cutting instruments being in separate dishes, and there should be a plentiful supply of whatever antiseptic the surgeon is in the habit of using.

Some rhinologists like to have the nose sprayed or douched before operation with an alkaline wash, to clean away any mucus, etc., others, however, prefer to operate without any such precaution, affirming that the nasal cavities are naturally aseptic and that preliminary douching or spraying only serves to introduce septic material. Should the nurse be ordered to use the douche or spray, the methods are described at length in Chapter IV.

With regard to dressings, the surgeon should be

asked what he wishes prepared, and everything should be ready to save the annoyance of delay.

Points relating to the chief operations will now be shortly reviewed, and the instruments, etc., required for each detailed.

#### A. OPERATIONS ON THE NASAL CAVITIES.

I.—ON THE TURBINAL BODIES. These may be either complete or partial turbinectomies and are spoken of, according as the anterior or posterior ends or whole body are removed, *anterior*, *posterior*, or *complete turbinectomy*.

(a) *Anterior Turbinectomy*. This operation is done under local anæsthesia by eucain or cocain. The instrument used may be the cold snare, the galvano-cautery snare, cutting, or punch forceps, or nasal scissors. When the surgeon uses the snare he may require also an ordinary hare-lip pin, so the nurse should see that one is ready. When an anterior turbinectomy is done with scissors after the method of Lake, a pair of long, narrow, pressure-forceps is required, as well as the scissors and a cold-wire snare. A nasal speculum is of course required.

(b) *Posterior Turbinectomy*. The removal of posterior hypertrophies is best performed under general anæsthesia. The instruments required are : Snares, mouth-gag, finger-guard (an indiarubber finger-stall with the tip cut off makes a very efficient guard against the patient's teeth), sponges on handles. The snares should be at least two in number ; it is wiser to have three or four ready prepared in case the wire of one should break. As regards the



mouth-gag used, it may at once be said that the ordinary Mason's gag (Fig. 26), with which the nurse is most probably already well acquainted, is sufficient for the purposes of all these operations. The sponges should be small and mounted firmly upon their holders ; they are to be used for sponging out the nasopharynx. The best form of holder is the two-pronged variety having a securing ring fitted with a bayonet catch.

(c) *Complete Turbinectomy* is sometimes done under local, but more often under general, anæ-

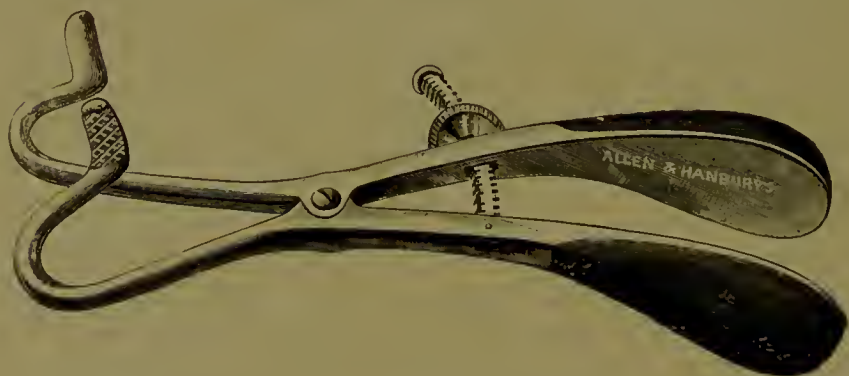


FIG. 26.

thesia. The instruments required (when a general anæsthetic is used) are : mouth-gag, Carmalt Jones's spokeshave, nasal forceps, scissors, wool-holders. There should be ready plenty of armed probes and cotton-wool. By some surgeons peroxide of hydrogen is used as a hæmostatic<sup>1</sup> ; it is best kept in small bottles (half-ounce) in a solution of twenty volumes, and one or two such bottles should be at hand, but not unstoppered until required. The hæmorrhage in turbinectomies is considerable, and the remarks

<sup>1</sup> Gellé, *Congrès de la Société Française d'Otologie*, etc., May, 1896.

already made as to hair, etc., specially apply here. Plenty of the strips of gauze already described for plugging should be provided.

II.—OPERATIONS ON THE SEPTUM. Operations on the nasal septum comprise the removal of spurs and other outgrowths and the straightening of deviations.

(a) *Spurs* may be quickly dismissed; they are usually removed under local anæsthesia, but on occasion it is of more advantage to do so under a general anæsthetic. The instruments used for their removal are scalpel, scalpel and saw (Bosworth's saw or a modification thereof), galvano-cautery,



FIG. 27.

dental drill worked by hand or electric motor (a method not to be recommended), or Carmalt Jones's spokeshave. Plugging with gauze or the insertion of a rubber splint may be required after.

(b) *Deviations*. The operations for remedying septal deviations are several in number. Forcible rectification is done with Adams's or Walsham's forceps (Fig. 27) and involves fracture of the bony part of the septum. Specially constructed plugs, or the rubber splints already referred to, are afterwards worn for some days. The instruments required are: nasal speculum, probes, Walsham's forceps,



nasal forceps, armed probes, nasal saw, nasal knife (these should be included in case the operator finds it necessary to remove any ridges), plugs or splints. A few strips of gauze should be ready in case they are required.

Asch's operation has been done under both local and general anæsthesia. Special instruments are required, namely separators (two—one sharp, one blunt), scissors (two pairs, straight and curved), compressing forceps (two pairs with long and short beaks), hollow vulcanite splints. These instruments are of special form, the scissors cutting with one blade only. Armed probes will be wanted besides, and a nasal speculum and nasal forceps should be put out. Hæmorrhage, which is free, is best checked by means of cotton-wool, iced aseptic water or hydrogen peroxide.

These operations are the most typical and best known of those designed for the rectification of a deviated septum.

Operations are also done to remedy deformities of the external nose, especially of the bony "bridge". The nasal bones are thoroughly loosened and replaced in the middle line. To effect this special forceps are used, those of Walsham being the best known. Strips of gauze for wrapping round the blades of the instrument are required, as well as pads of lint and strapping, or a special nose-truss. Collodion should also be at hand for sealing any slight accidental skin wound.

III.—THE REMOVAL OF TUMOURS. A large number of tumours can be removed under local anæsthesia

with cocain or eucain, but occasionally general anæsthesia is necessary, especially in cases of malignant growths, and when the growth is so large as to require some additional operation in order to remove the whole tumour properly, such as division of the soft palate, or resection of some of the bones of the face. Such operations as these are often performed by a general surgeon, and need not be dwelt upon here; probably the nurse has already seen them during her hospital training.

The growths which the nurse will most frequently see the rhinologist remove are *nasal polypi*. They are preferably operated upon under a local anæsthetic, as with general anæsthesia it is difficult for the surgeon to keep a perfect view of the field of operation. They are removed with the cold-wire snare, galvano-cautery snare or forceps. The other instruments to be put out are : nasal speculum, nasal probe, and wool-armed probes. A finger-guard should also be at hand in case the operator has to introduce his finger into the nasopharynx. If the surgeon uses also a polypus hook, that instrument must also be ready. If the cold-wire snare is used, several should be ready armed. When the galvano-cautery snare is employed, sufficient current to make it a *dull red heat* only is used. Other cautery points, a point and a flat-knife point should be at hand. *Papillomata* are removed by means of curved scissors, cold-wire snare or galvano-cautery snare. *Vascular tumours and nævi* are also removed by the galvano-cautery or the cold-wire snare. Small nævi are often destroyed with fuming nitric acid or ethylate

of sodium. The nurse should have ready small splinters of wood for the application of these agents, as well as some solution of bicarbonate of soda for the surgeon to use if he wishes to neutralise any excess of acid.

Other nasal tumours, fibrous, cartilaginous or bony are removed by the snare, or with a knife or saw.

#### B. OPERATIONS ON THE ACCESSORY NASAL CAVITIES.

The most important of these procedures are the opening of the frontal and maxillary sinuses. In

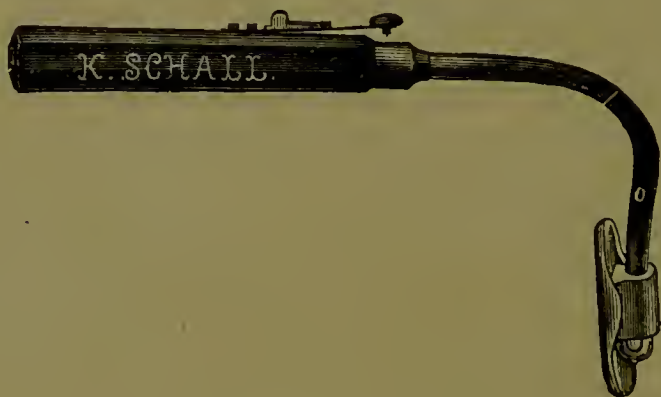


FIG. 28.

the diagnosis of diseases of the accessory cavities the *Transillumination lamp* (Fig. 28) is often used. This is a small electric lamp which is placed in the patient's mouth to test the translucency of the nasal accessory cavities. The nurse, should the test not be carried out in a dark room, should have ready with it an opaque black cloth large enough to place over the heads of both surgeon and patient, and which can be sufficiently secured about them to prevent the entrance of outside light.

I.—MAXILLARY SINUS (ANTRUM OF HIGHMORE). The operations upon this cavity are done for empyema and for new growths.

(a) *Empyema*. This sinus is frequently opened and drained for purulent collections. Preliminary tapping through the nose for exploratory purposes may be done under cocain or eucain anæsthesia, the instrument used being a Krause's antrum trocar (Fig. 29). This is a curved cannula with a trocar and guide for entering the antrum through the outer wall of the nose just below the inferior turbinal body.

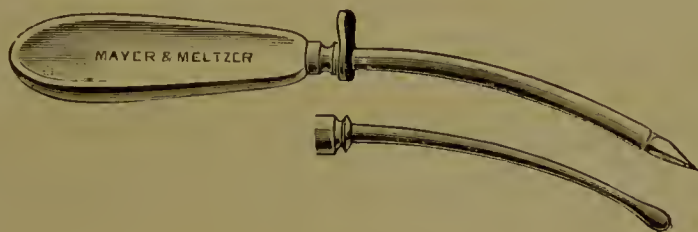


FIG. 29.

Some surgeons prefer to use this method without further operation, the antrum being washed out daily through the cannula, which is reintroduced on a guide. Others prefer to use the instrument only for exploratory purposes.

In draining the sinus under general anæsthesia, it is opened either through a tooth socket or by piercing the upper jaw just above the canine tooth (in the canine fossa). The instruments required are: antrum drill (Fig. 30) and syringe, curette, mouth-gag, forceps, probes, cotton-wool swabs, antrum drainage tubes. Tooth forceps should also be put out in case the surgeon should find it necessary to extract a tooth. A bowl of whatever

antiseptic the surgeon uses for washing out the cavity should be ready. For irrigating the antrum either a ball syringe, siphon irrigator, or Higginson's syringe is used. Antral drainage tubes are used of varying pattern; a common form is made of silver wire wound spiral-fashion in the form of a tube. Some surgeons recommend that when first used the tube should be attached to the patient's cheek by a thread passing out of the mouth and secured by a piece of strapping, but patients are usually able to easily retain the tube without this precaution. In Spicer's method of opening the antrum a mallet and chisel are used and the cavity filled with creolin



FIG. 30.

gauze; more recently, however, the opening has been sutured and the antrum washed out through the natural nasal opening or through an artificial one made with a Krause's trocar.

(b) *New Growths.* Operations on the antrum for the removal of new growths vary from attacking the antrum through the mouth by turning up the lip, to complete resection of the upper jaw. Probably the nurse will have seen something of such procedures in her experience at a general hospital.

II.—FRONTAL SINUS. This cavity is reached by an incision, either through the eyebrow or in the middle line, a drainage tube introduced through its exit into the nose, and the wound sutured. The



instruments used are : scalpel, raspatory, small (half-inch) trephine (some operators use a drill or a chisel and mallet), curette, long probe, drainage tube, forceps, needles, sutures, cotton-wool swabs. Some surgeons prefer not to introduce a drainage tube but to wash the sinus out without (see Chapter VI.).

### C. OPERATIONS ON THE NASOPHARYNX.

The most frequent operation done upon the nasopharynx is for *adenoids*. So much has been written upon the subject that one might almost say the methods of operation are legion. Some use the finger-nail or an artificial scraper only, others use forceps, or various-shaped curettes. Some prefer no anæsthetic, others gas, many chloroform, some ether, or gas-ether. Operators also differ much as to the position of the patient. Some prefer them lying down with or without the head depending over the edge of the couch, others like to operate with the patient sitting up. But whatever the position or plan of operation affected by the surgeon the principles are the same. The nurse must bear in mind that the hæmorrhage is free, and the directions as to covering the hair, etc., already described should be attended to. In preparing for the operation in a private house it is a good plan to spread the floor with old newspapers to prevent soiling the carpet. Plenty of hot and cold water, bowls and basins should be provided, and the following instruments put out : the particular instrument used by

the operator, Lowenberg's forceps (or some modified pattern), Gottstein's curettes or some other pattern of curette, finger-protector, sponges on handles, mouth-gag. It is also wise (and this remark applies to all operations on the nasopharynx) to have the instruments required for tracheotomy (*vide* Chapter XI.) at hand.

The method employed by my colleagues and myself at the Royal Ear Hospital is as follows: the patient lies in the dorsal position with the head partly over the end of the table. Gas is used for adults, chloroform for children. The mouth-gag is

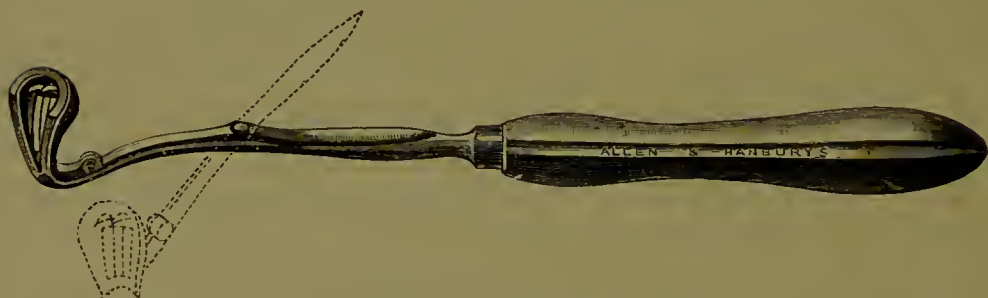


FIG. 31.

adjusted and the chief mass of growth is removed at one sweep with a Delstanche's modification of Gottstein's curette (Fig. 31), the adenoids coming away in the cradle attached to this instrument. Gottstein's curette (Fig. 32) is then used to scrape laterally, and the operation is finished with the nail, the finger being protected by an indiarubber sheath. As the Gottstein's curette is discarded for the nail the patient is turned over on his face in order that the blood may have free exit from the mouth. I am convinced that this method of working is the best and most effectual.



*Tumours* of the nasopharynx are removed both through the natural passages and by more serious operations such as resection of the jaw. The

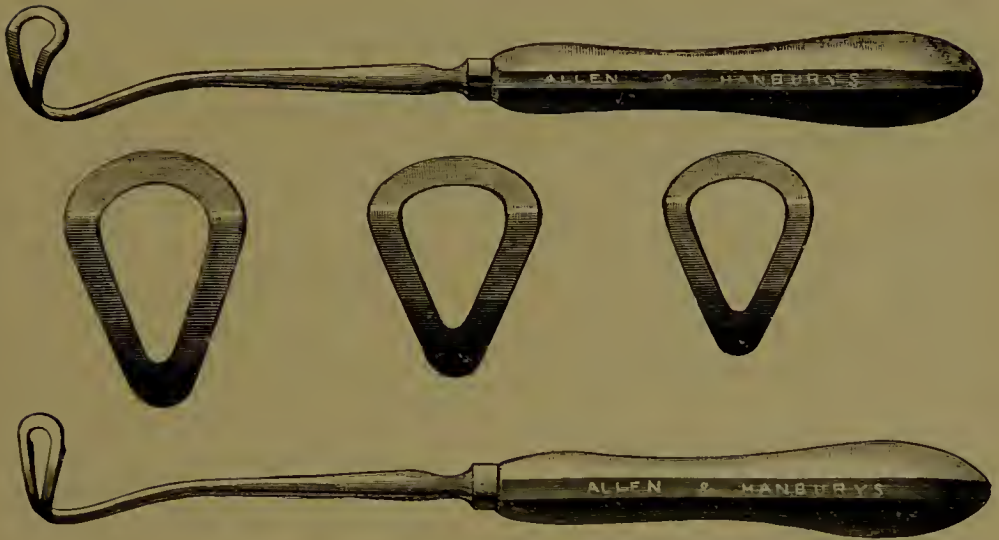


FIG. 32.

remarks, therefore, that have already been made regarding nasal tumours will, to a great extent, apply to those growing in the nasopharynx.

## CHAPTER VI.

### THE AFTER-TREATMENT OF NASAL OPERATIONS.

GENERALLY speaking, the after-treatment of operations upon the nose and nasopharynx does not materially differ from that of those upon other regions. There are, however, one or two minor points, attention to which will be of value both in regard to the success of the treatment and the comfort of the patient, and a few words thereon will not be amiss.

In Chapter V. operations upon the nose and nasopharynx were dealt with in three groups, a classification best adhered to whilst speaking of their after-treatment.

A. OPERATIONS ON THE NASAL CAVITIES. Cautery operations may be dismissed at once; their after-treatment does not concern the nurse, and can be carried out by the patient at home. Some surgeons leave such cases entirely alone, others prefer to have the nose gently syringed in the manner described in Chapter IV. When this is done care must be taken if a rubber splint has been inserted in the nostril not to disturb it, but to syringe gently along its side.

*Turbinectomies.* After operations for removal of the whole or parts of the turbinal bodies, the surgeon

will probably indicate the treatment he wishes carried out. When a complete turbinectomy has been done the bleeding is often very profuse, but can usually be controlled by plugging with strips of gauze when the operation is completed. These should not as a rule be disturbed until the patient is seen again by the surgeon. Turbinectomy has been followed by secondary hæmorrhage. Should this occur the nurse should at once send for the surgeon, and, whilst waiting for his response, should endeavour to control the bleeding by plugging with gauze as indicated. In plugging the nose with gauze the direction (*straight backward*) of the nasal passages should be kept in mind, for, should attempts be made to push the strips of gauze upward, serious damage and pain to the patient may result. There is also said to be some danger of septic trouble after complete turbinectomy, but this complication is, I think, a rare one; an opinion which, I believe, is shared by other rhinologists. Provided due precautions are taken at the operation to prevent sepsis such a complication should not occur, and both that and secondary hæmorrhage can be avoided by interfering as little as possible with the nasal cavities after an operation, and so ensuring to them the rest so essential to healing, and guarding against the possible introduction of septic material. After removal of the posterior ends of the inferior turbinals, syringing should not be practised for reasons that will be referred to later.

*Operations on the Septum.* Much of what has just been said regarding the after-treatment of

turbinectomies applies here ; probably inaction is of more value than interference. Should the surgeon order syringing, it must be done along the sides of the splints, which should on no account be disturbed.

After all severe nasal operations the patient generally experiences discomfort from swelling of the nose and eyelids and excessive tear secretion. This passes off rapidly, and can be much alleviated by bathing and sponging with hot water.

*The removal of Tumours.* As regards the removal of tumours, again there is little to be said. Hæmorrhage after removal of polypi, etc., can be readily controlled by insufflation of tanno-gallic acid, the application of ice, or peroxide of hydrogen, and scarcely ever calls for plugging. When the growth removed is one of a malignant nature, its extirpation will have probably been carried out by means of one of the more serious resection operations, the after-treatment of which will be at the direction of the surgeon, and belongs more to the province of general surgical nursing.

B. OPERATIONS ON THE ACCESSORY SINUSES. After operations upon the *maxillary sinus*, the nurse may be called upon to syringe daily through the opening made. The operations upon this sinus, as will have been gathered from the preceding chapter, differ somewhat with different surgeons, but the methods employed by my colleagues and myself at the Royal Ear Hospital may be taken as fairly typical. The cavity having been opened either through the alveolus or through the canine fossa, and a silver drainage tube inserted, it is washed

out daily with antiseptic lotion (carbolic 1 in 40, boric acid, or permanganate of potassium). It is this washing out that concerns the nurse, and the proper method of doing it is as follows :—

The patient is seated, a towel is placed round the neck, and a bowl held beneath the chin. The drainage tube is removed from the alveolus and placed in 1 in 20 carbolic lotion. An indiarubber syringe, with a nozzle made the size of the drainage tube, is filled with the solution to be used (suitably warmed), and the nozzle inserted in the opening. The cavity is then gently washed out until the fluid which issues from the patient's nose is no longer discoloured or turbid. The drainage tube is then properly cleansed and reinserted. A Higginson's syringe, whereby a continuous stream can be regulated, is the best form to use. When the patient leaves the hospital he will have to thus wash out his antrum for himself, and the duty of teaching him will devolve upon the nurse; she should therefore explain the procedure to him, and let him carry it out under her supervision during his last day or two in hospital.

The after-treatment of empyema of the *frontal sinus* differs according to whether the surgeon inserts a tube at the operation or not. In the latter case the after-washing will be done by the surgeon himself. The introduction of a frontal tube through the nose requires great care, the thin roof separating the nasal chambers from the cranial cavity being so thin as to be easily perforated, and it should not be attempted by the nurse. If, however, a drainage

tube has been left in the passage from the sinus to the nose, the nurse may be required to irrigate the cavity through the tube once or twice daily with a weak antiseptic lotion (*e.g.*, boric acid, gr. xx. to ʒi.). This should be carried out in much the same way as that described for the maxillary sinus, except that the drainage tube must not be removed. The lotion must be suitably warmed before it is used, and every manipulation should be done gently.

C. OPERATIONS ON THE NASOPHARYNX. In the after-treatment of operations for *adenoids* it is an undoubted fact that much harm may be done by injudicious interference. Hæmorrhage is free, but soon ceases. No attempt should be made to stop the bleeding by syringing the nose with iced water, etc., as has at times been recommended. The application of ice or cold water to the forehead is, however, a valuable agent in stopping hæmorrhage from the nasopharynx, and may be used with impunity. After an operation for adenoids the patient should be placed in bed on his side and allowed to sleep off the effects of the anæsthetic. Frequently vomiting of blood occurs at intervals for from six to twelve hours; this is due merely to the blood which has been swallowed, and need cause no alarm.

The nasopharynx takes on the average ten days to heal completely, and during this time the patient requires a certain amount of care. For the first one or two days it is best to keep him in bed and to confine him to the house for the next four days. If the weather be fine he may be allowed out during the daytime for the remaining part of the ten days.



During the confinement to the house it is of importance that the temperature of the room should be kept equable, and that the patient should be guarded against draughts. Provided hands, sponges, and instruments are aseptic and the nasopharynx be left to itself after the operation, there is no reason to expect any case of postnasal growths to do other than heal quickly and without complications. The meddlesome practice of douching or syringing the nose or nasopharynx with the idea of keeping the parts aseptic is not only useless but distinctly harmful. Cases in which inflammation and suppuration of the middle ear have occurred after operations for adenoids can, unless due to laceration of the Eustachian cushions, be always traced to either douching or syringing, carelessness in getting into draughts or unsanitary surroundings.

As regards the feeding of the patient, for the first day he should take nothing but liquid—milk, beef-tea, etc.—and for the first six hours or so after the operation (whilst there is any vomiting of blood) it is better to only give occasionally a teaspoonful of hot water or ice to suck. The second two days soft foods (bread and milk, milk puddings, custards, etc.) may be given, after which the soreness will have passed off sufficiently to allow of his taking more solid food.

Whilst in attendance upon these cases, the nurse will be of considerable help in initiating that after-teaching which is so necessary in cases of adenoids. The mouth-breathing induced by the growths rapidly becomes a habit, and this habit remains



unless combated. After the first few days are over, therefore, the nurse should frequently remind the patient to keep his mouth shut, and endeavour to breathe properly through the nose.

Any ear complications (discharges and the like) will be treated during the convalescence as directed by the surgeon. In cases in which Politzerisation is needed, however, this should not be done till at least a week after the operation.

These remarks may also be taken as applicable to the after-treatment of operations for the removal of other growths from the nasopharynx, but, at the risk of too frequent repetition, I would again impress upon the reader the evils of syringing or douching the nose after operations in this region; not only does it interfere with the proper rest necessary for repair, but it is a possible source of infection, and may also set up severe inflammation of the middle ear.

## CHAPTER VII.

### OPERATIONS ON THE EAR.

IN operations on the ear it may again be said that the general preparation of the patient will not differ from that for any other surgical procedure. The local preparation of the ear is, however, of great importance, and upon its proper purification depends to a considerable extent a good result. The ear will stand very strong antiseptics, and this fact is made use of in purifying it for operation. There are several methods used, and different surgeons prefer different antiseptics ; there is no need, however, to describe them all, and the method in vogue at the Royal Ear Hospital will, therefore, be the only one detailed, and is as follows : having syringed the ear with a warm antiseptic solution to clear out all discharge, the auricle and surrounding part is first carefully washed and purified with 1 in 40 carbolic, care being especially taken to thoroughly clean the nooks and crannies made by the foldings of the cartilage. The ear is then syringed with warm 1 in 40 carbolic and plugged with a strip of gauze wrung out in the same solution ; a pad of this material is then placed in the concha so as to fill up all the irregularities of the external ear, some

absorbent wool and a bandage keeping the whole in place.

At the operation a piece of mackintosh sheeting is placed beneath the head and over the shoulders, and this is covered by a towel wrung out in 1 in 20 carbolic, a second "1 in 20 towel" being wrapped around the head, covering the hair. The surgeon removes the gauze from the ear and proceeds to purify it further by first syringing it with warm 1 in 20 carbolic, and finally swabbing it out with "strong mixture".<sup>1</sup> This final purification by the surgeon is, of course, done when the patient is anæsthetised. The operation is then proceeded with.

In the first cleansing of the ear one of the numerous ætherial liquid soaps is very useful, as it removes all greasy material without the preliminary application of ether or ammonia. In operations where a portion of the head requires shaving it is well to do this first, as the shaven part and the ear can be then purified at one and the same time.

The above method applies more especially to operations done under general anæsthesia. In those smaller manipulations performed under cocain or eucain in the out-patient room, the surgeon usually purifies the ear at once, a proceeding which is too often only done in a perfunctory manner, especially in those ear departments in general hospitals which are placed in the care of young general surgeons who are playing at otology.

<sup>1</sup> Lister's "strong mixture" consists of a solution of 1 in 25 carbolic acid, with  $\frac{1}{300}$ th part of perchloride of mercury.

As regards the preparation of snares, what has been said in referring to operations upon the nose applies also here.

The smaller operations often done in the out-patient room are the following :—

1. Removal of polypi and granulations.
2. Paracentesis of the drum membrane.
3. Opening of furuncles.

These may all be done under cocain, eucain, or general anæsthesia by gas, chloroform or ether. When done under local anæsthetics the nurse will probably be ordered to instil the drug after purifying the ear. The purification should consist of syringing with 1 in 40 carbolic, the cocain or eucain being then applied as directed in Chapter IV. (page 24). Some strong mixture should be ready for the surgeon to use, with an armed probe, as a preliminary to the operation.

*Removal of Polypi and Granulations.* The instruments required are : specula, probes, wool-armed probes, snare, curettes. The head requires to be gently but firmly steadied by the nurse. A towel should be placed on the patient's shoulder and tucked into his collar. Snares vary in pattern ; the best is that designed by Mr. Cresswell Baber (Fig. 33), which has a very fine tube, causing less obstruction to a clear view than any other snare I have met with. Curettes are also of various patterns, that of Burkhardt-Merian being the most useful one (Fig. 34). After curretting, the ear is again syringed with 1 in 40 carbolic and then plugged with gauze wrung out in a similar solution. This simple dressing is

most important and must not be dispensed with, serious accidents having been at times occasioned by its omission.

*Paracentesis of the Drum Membrane.* The instruments required for this simple but valuable operation are specula, wool-armed probes and para-



FIG. 33.

centesis knife. The last-named instrument (also called a myringotome) varies in pattern (Fig. 35), but is usually a small spear-shaped knife. A fine, sharp, tenotomy knife will answer the purpose. The ear should not be syringed after the operation but



FIG. 34.

plugged with gauze wrung out dry in 1 in 40 carbolic. The nurse will be again required to steady the head.

*Opening Furuncles.* It is doubtful whether any ear disease causes more actual distress and suffering than boils in the external meatus. Relief on incision

is prompt, and may be afforded under cocain, eucain, or gas. The instruments required are speculum and



FIG. 35.

furuncle knife (Fig. 37). This opportunity may be taken to mention the useful operating speculum of



FIG. 36.

Pritchard (Fig. 36). This is merely an ordinary speculum with part of one side of the narrow end

removed. The meatus must be purified before opening the boil, but, owing to the exquisite tenderness present, it should be done under cocain or eucain anæsthesia, and should consist of careful mopping out with a solution of perchloride of mercury of the strength of 1 in 1000, or, better still, with Lister's "strong mixture". If the boil is opened under cocain or eucain, the head requires very careful and firm steadying, and precautions must be taken to prevent the patient knocking up or seizing the operator's hand. To prevent accident a very useful hook-shaped furuncle knife has been devised by Dundas Grant.



FIG. 37.

Of the more serious operations the chief ones to be described are :—

1. Extraction of foreign bodies by turning forward the auricle.
2. Excision of the ossicles (ossiclectomy).
3. Removal of exostoses.
4. Mastoid operations.
5. Operations for cephalic abscess.
6. Operations on the lateral sinus.

1. *Extraction of Foreign Bodies.* It occasionally happens that a foreign body becomes so firmly wedged in the deeper part of the meatus that it defies all ordinary methods for its extraction. In such cases it may become necessary to do an operation by which the auricle and posterior wall of the cartilaginous meatus are detached and turned



forward, and a portion of the bony meatus may even have to be chiselled away in order that the foreign body may be extracted by that way. In order to effect this the patient should, if necessary, be shaved as directed below for a mastoid operation and the

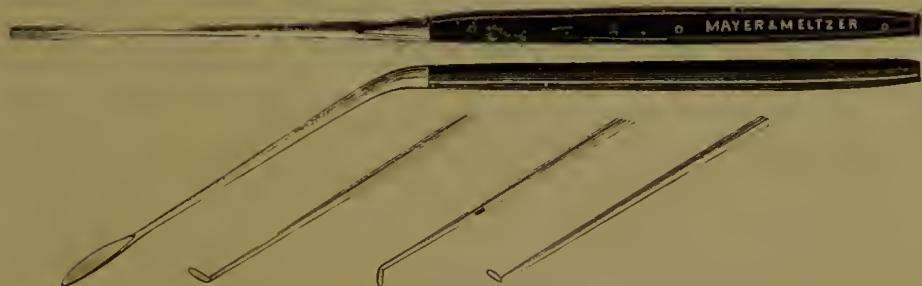


FIG. 38.

ear purified in the usual manner. The instruments required will be scalpel, Spencer Wells' forceps, perisosteum elevator, retractors, chisels and mallet, probes, aural forceps, needles and sutures, cotton-wool swabs.



FIG. 39.

2. *Excision of Ossicles.* For this operation the following instruments should be prepared: specula, a special ossicectomy knife (Fig. 38), Delstanche's extractor (Fig. 39), Sexton's pincette (Fig. 40), incus hook (Fig. 41), Lake's attic curette (Fig. 42), probes, curettes, small sponges on forceps (small

pieces of sponge on ordinary Spencer Wells' forceps may be used, or they may be placed in special sponge-holders), or small cotton-wool swabs, and aural forceps. The hæmorrhage is often free in

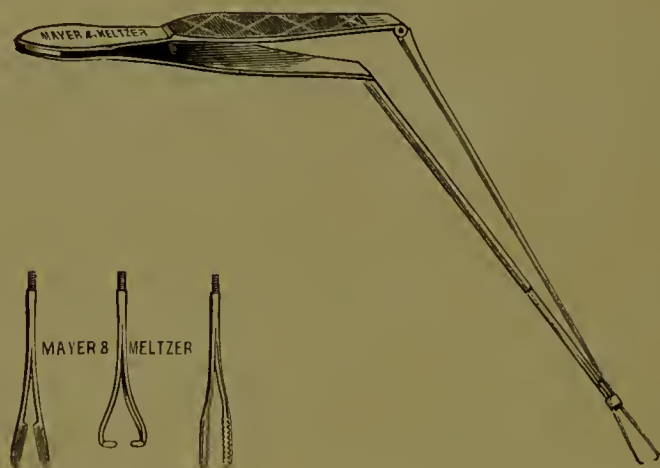


FIG. 40.

this operation ; it can, however, be sufficiently controlled by a preliminary instillation of cocain, pressure by sponges, etc., or by peroxide of hydrogen. When the operation is finished the



FIG. 41.

nurse should have ready the syringe and some hot antiseptic for syringing. The ear is finally dressed as already described. It is as well to mention that in all operations the nurse should see that everything removed is kept for the surgeon's inspection, and in

ossiculectomy she should have ready a small box or bottle in which the ossicles removed may be preserved.

3. *Removal of Exostoses.* There are several methods of operating for exostoses of the external meatus. Some surgeons use the drill, others the mallet and chisel or gouge, others the dental drill. Files and the galvano-cautery have also been used and recommended. At times it is necessary to detach the auricle and turn it forward. The preparation of instruments therefore depends upon the method employed. Of all the operations done,

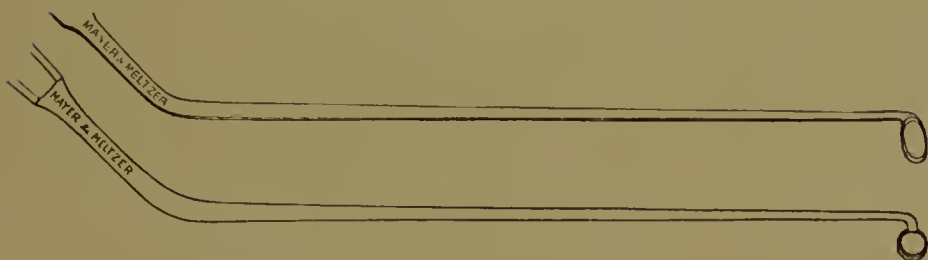


FIG. 42.

however, the gouge or chisel and mallet has proved the best.

When this method is employed the following instruments will be required: specula, probes, small chisels,<sup>1</sup> gouge, mallet, forceps, small sponges, or cotton-wool. If it is necessary to turn forward the auricle, a scalpel, Spencer Wells' forceps, periosteum elevator, needles and sutures must be added. Gauze strips for plugging, syringe and hot antiseptic solution, and peroxide of hydrogen should also be at hand.

<sup>1</sup> The small dentine chisels used by dentists are most useful.

4. *Mastoid Operations.* Some surgeons operate with the trephine, others with the drill or burr, whilst a third group use the chisel and gouge. Personally I prefer the last-named method. One general surgeon of note has even claimed superiority for the carpenter's gimlet.

Before the operation the side of the head requires shaving, an area of clear skin with a radius (measured from the centre of the meatus) of about three and a half to four inches being necessary. It is better to shave too much than too little. This area and the ear itself must be carefully purified. When the



FIG. 43.

patient is on the table and under the anæsthetic the head must be surrounded with towels wrung out in 1 in 20 carbolic solution as already directed. The instruments necessary are : scalpel, Spencer Wells' forceps (at least a dozen pairs), mallet, chisels, gouges,<sup>1</sup> blunt retractors, curettes, Lake's attic curette, sharp spoons, Lake's antrum guide (Fig. 43), scissors, ligatures, needles and sutures, probes, wool-armed probes or small sponges on forceps or

<sup>1</sup> Unless the operator prefers to use the trephine, drill or burr : but, even then, it is well to have mallet, chisel and gouge at hand. It is always better to err on the side of too many than too few instruments.

handles, forceps (dissecting and aural). There should be at hand a syringe and plenty of hot water and antiseptics, and cotton-wool swabs. Peroxide of hydrogen is often useful. Gauze strips, gauze pad, wool and bandage will be wanted. It is not often necessary to use drainage tubing, but some should be ready in case it is required.

5. *Operations for Cephalic Abscess.*

6. *Operations on the Lateral Sinus.* In operating upon cerebral or cerebellar abscess, or for septic thrombosis of the lateral sinus due to middle ear

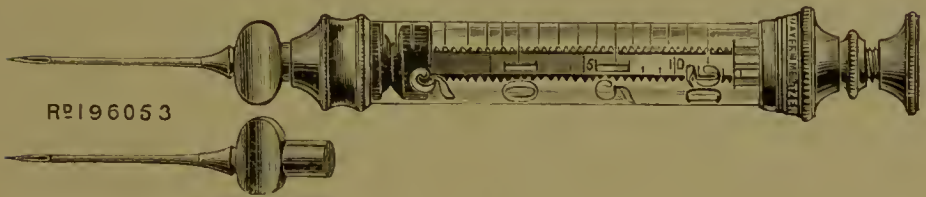


FIG. 44.

suppuration, the mastoid operation is almost always first performed; the instruments necessary for that procedure should therefore be placed ready. In addition a trephine, a Pravaz syringe (Fig. 44), a pointed bistoury and a small pair of scissors should be put out. If it is a case of thrombosis of the lateral sinus with which the surgeon has to deal, there should be plenty of strips of iodoform gauze at hand for immediate use if required.

In conclusion, one may mention the removal of tumours from the auricle, which scarcely differs from the removal of such growths elsewhere.

## CHAPTER VIII.

### THE AFTER-TREATMENT OF OPERATIONS ON THE EAR.

THE after-treatment of operations on the ear is a subject with which, in a volume like this, it is somewhat difficult to deal. It is not easy to know exactly how much to say upon the subject, since in different institutions and with different surgeons the amount of work left to the nurse varies much. One thing, however, cannot be too carefully kept in view however great or however little the work may be, and that is, the paramount necessity of perfect asepsis or antisepsis in the after-treatment of aural operations. Much of the success of the work which has been done will depend upon the proper observance of this rule, and, whether the surgeon or the house-surgeon dresses the case himself, or whether the nurse is intrusted therewith, the latter must never relax her vigilance as regards the instruments and solutions used, the dressings required, and, last but not least, the condition of her own hands. Instruments required for the dressing of a case should be sterilised before use; antiseptic dressings should be kept in their proper box and only sufficient for the needs of the case put out. As regards hands, some



people regard a bowl of antiseptic as a sort of fetish, by dipping into which the hands become immediately and uncompromisingly proof against all infection. Hands require properly scrubbing with plenty of soap and hot water and a good nail-brush and then thoroughly rinsing in an antiseptic. Many a surgeon's good work has been marred by the dirty hands of an otherwise well-intentioned nurse. It is granted that this is not infrequently the surgeon's fault. The attitude of some practitioners, in the light of modern surgery, towards antiseptics is often curious, to say the least of it. A man will drop a previously sterilised instrument on the floor (not always too clean, certainly not aseptic), stamp on it with his boots, pick it up, and after swishing it about in a bowl of 1 in 20 carbolic will work with it again under the unhappy delusion that he has rendered it fit for use.

The nurse should scrub her hands—back, front, knuckles and nails—the washing extending above the wrists. They should be rinsed in clean water, dried on a clean towel and then dipped in the antiseptic. Once cleansed and antisepticated, such hands must not be used for touching anything which has not been made surgically clean. This applies not only to the nurse who may have to help in an operation (touching and handling instruments, etc.), but to one who is about to apply a dressing.

Reverting to the operations discussed in the last chapter, the after-treatment of such small manipulations as the removal of polypi and granulations, paracentesis of the membrana tympani, and the

opening of aural furuncles is, as a rule, left to the patient at home. Something has already been said as to the immediate after-treatment of these minor operations, but it will do no harm to repeat it. After the removal of polypi or the curetting of granulations the ear must be gently syringed with a hot antiseptic lotion and lightly packed with a strip of gauze, and, as has been said, no patient should be allowed to go away without this simple precaution.

After paracentesis of the drum membrane, the meatus should be lightly plugged as directed. Otologists vary in their opinions as to the after-treatment of this little operation. Many (the author amongst them) prefer simply to pack with gauze and not to syringe the ear at all. Syringing should certainly not be needed if the ear has been properly purified before the operation.

The importance of antisepsis after the incision of boils in the ear cannot be too strongly insisted upon. It has been recommended to anoint the boil immediately after incision with carbolic glycerine or some other antiseptic to prevent bacteria from invading neighbouring follicles. Swabbing the meatus with Lister's "strong mixture" certainly gives good results. Should the nurse be in charge of a patient suffering from aural furunculosis she must see that the treatment after their incision is carefully and punctually carried out. The writer always follows up such incisions by instillations of spirit. In spite of the intense irritation which follows aural furunculosis the patient must on no account be allowed to scratch the ear.

Passing now to the more serious operations, after that mentioned for *extracting firmly wedged foreign bodies* the ear will be packed with antiseptic gauze, the sutured wound behind the auricle dressed, and the whole enveloped in absorbent wool and bandaged. This dressing should not be disturbed nor the patient be allowed out of bed until the surgeon has seen him. Further treatment will be directed by the operator.

The next operation to be dealt with is that of *ossiculectomy*. After this procedure the ear is thoroughly antisepticated with hot sublimate (1 in 2000) or carbolic (1 in 20) solution, and carefully plugged with antiseptic gauze wrung out in 1 in 40 carbolic.

However the ear has been dressed, it should not be touched until the surgeon has seen it. Occasionally the patient requires confinement to his bed for one or two days after the operation on account of vertigo, but this dizziness varies much and can generally be relieved by appropriate treatment. Pain in the ear following the operation should be treated by placing hot dry wool or flannels over the side of the head.

After the *removal of Exostoses* little more need be said; the meatus is plugged with gauze, and this plugging usually requires continuing longer than in operations upon the middle ear. From one to three weeks is usually sufficient, but it may require longer continuance. If the removal of the growth has required the turning forward of the auricle, the incision will have been sutured and the wound will merely require ordinary treatment, which, in these

days, means leaving it alone. Stitches will, of course, be removed by the surgeon.

*Mastoid Operations.* Every case of mastoid operation varies more or less in its after-treatment. The average duration of the wound treatment until cicatrisation is completed varies in the regular course from two to five weeks, but some cases require longer than this. It may at once be said that the treatment after opening the mastoid antrum is of great importance for the final result. The necessity for the most careful antisepsis and most stringent supervision cannot be too strongly insisted upon. In some cases it may be sufficient to change the dressing every two or three days. The time that the first dressing is changed will vary with the case; it may, however, be necessary to change it in the first twenty-four hours or thereabout. The nurse should keep a careful watch for pain and on the temperature and tell the surgeon immediately should the former be severe or the latter rise and continue high. As a general rule the dressing will consist of the removal of the gauze plugging the meatus, and gentle irrigation with 1 in 40 carbolic, followed by replugging with gauze. A drainage tube is rarely required, and the wound behind the ear is generally sutured and allowed to heal by first intention. Unless there is any reason to the contrary, the after-dressings need only be done every two or three days, the indications for a daily change being (1) return of pain, (2) rise of temperature, (3) rapid soaking of the dressings, (4) continuance of septic suppuration.

Should the nurse be intrusted with the dressings, she must keep ever before her the absolute necessity for strict antisepsis. The directions as to instruments and hands must be rigidly adhered to. Should the bandage, gauze, or gauze packing, stick, it should not be roughly or forcibly removed, but soaked with hot antiseptic lotion, and a little care and trouble exercised in its removal.

The after-treatment of *cerebral and cerebellar abscesses and for septic thrombosis of the lateral sinus* will remain in the hands of the surgeon, the nurse acting merely as an accessory, although an accessory of considerable importance. The necessity for the strictest antiseptic precautions is, if anything, even more to be insisted upon than before. The management of cerebral cases belongs in great part to the domain of general surgery, and as the nurse will probably have already received practical training in the subject, more than this passing reference thereto need not be made.

After the removal of tumours from the auricle, the treatment will not differ from that of any other operation wound elsewhere.

## CHAPTER IX.

### OPERATIONS ON THE THROAT.

THE operations on the throat are both numerous and varied, ranging from the application of the galvano-cautery to excision of the larynx. They include one of the most important operations in surgery, viz., tracheotomy, a procedure of such importance that it has been judged wiser to devote a special chapter to it and its after-treatment.

The operations on the pharynx, fauces, tonsils, soft palate, and uvula, done through the mouth are as follows: galvano-cautery applications, removal of the tonsils, peritonsillar abscess, removal of the uvula, removal of growths, operations for cleft palate. The last-named operation belongs rather to the province of general surgery, and the nurse will probably have already obtained experience thereof and it will not, therefore, be touched upon.

The galvano-cautery is applied to cases of granular pharyngitis for the destruction of the granules and the obliteration of the enlarged blood-vessels. One of the finer points will be used, together with a tongue-depressor. Galvano-puncture and galvano-cautery dissection are used



largely in America for the reduction or removal of hypertrophied tonsils; for the former a fine point is required, but the method is both tedious and somewhat painful; for the latter a flat cautery knife is used, but in this country the majority of surgeons prefer to employ some of the other methods used for dealing with large tonsils.

The galvano-cautery is also used for reducing enlarged veins and adenoid hypertrophy at the base of the tongue. A broad, flat point is generally used for this purpose. For the latter condition (hypertrophy of the lingual tonsil), a curette, a snare, or some special form of guillotine may also be used.

*Retro-pharyngeal Abscess.* Abscesses due to suppuration in the cellular tissue of the posterior wall of the pharynx are evacuated either through the mouth by aspiration or by a knife, or by an incision made externally in the neck behind the sternomastoid muscle. The chief point about the former method is that there is a danger of the patient being suffocated by too great a flow of pus, so that the head must be very low and the patient turned on to or almost on to his face to prevent the escaping pus from running into the larynx.

Whilst mentioning this subject allusion should be made to the condition known as Ludwig's Angina (*Angina Ludovici*), which is practically an erysipelas of the region beneath the chin and jaw (*submaxillary region*). It is not a common affection and is characterised by rise of temperature and rapidly inflammatory œdema in the chin and front of the neck. As it generally ends in gangrenous

suppuration and death from septic intoxication, or from asphyxia from extension to the larynx, it is a disease requiring prompt treatment. The treatment necessitated is that of prompt free incision into the cellular tissue beneath the chin.

These two conditions have been referred to particularly here because the reader will again meet with them when after-treatment is discussed.

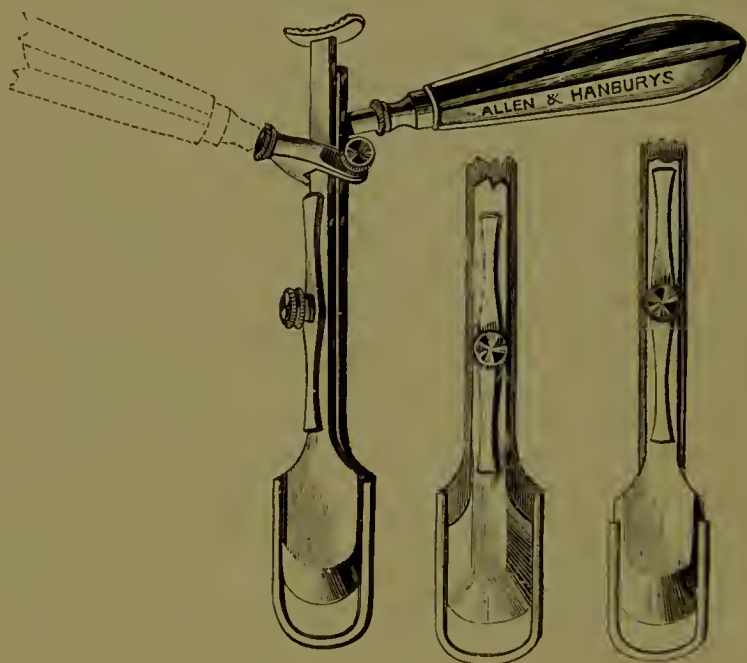


FIG. 45.

*Removal of Tonsils (Tonsillectomy).* For the removal of enlarged tonsils, putting aside the cautery dissection method already alluded to, a simple guarded bistoury with a pair of forceps or a tonsillotome (or guillotine) may be used. When the bistoury is employed the most useful kind of forceps are ordinary vulsellum forceps like those found amongst the instruments of the gynæcologist. Of

guillotines the modifications and patterns are legion ; indeed, just as no obstetric physician appears to think himself capable of good work until he has introduced a modified pair of midwifery forceps, so the throat specialist considers it incumbent upon him to make some alteration (generally trifling) in the tonsil guillotine. The best known and most

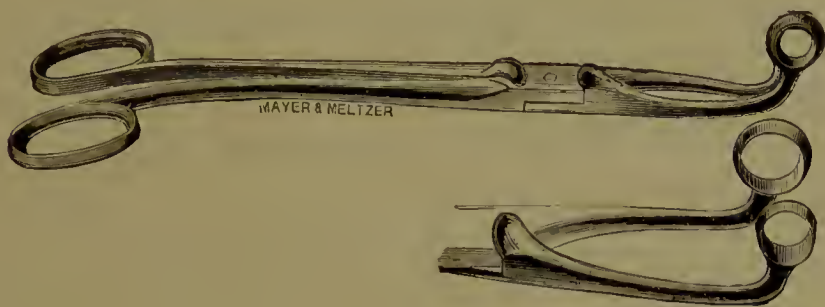


FIG. 46.

universally used tonsillotome is that of Mackenzie (Fig. 45). The cold-wire snare is also used by some practitioners. When the tonsil does not sufficiently project portions are often punched out with one of the various punch forceps invented for that purpose, the best of which is Kretschman's



FIG. 47.

(Fig. 46). Another method of removing enlarged tonsils is by *enucleation*. This is effected by means of the surgeon's finger-nail, sometimes aided by a bistoury to incise the mucous membrane.

*Peritonsillar Abscesses* require opening with an ordinary bistoury or one guarded, or with a special tonsil knife (Fig. 47). The old method of partially

surrounding the blade of a curved bistoury with strapping is a dirty one, and should the nurse be asked to prepare a knife for the operation she can quickly do so by slipping a piece of drainage tubing over the blade so as to leave the last half-inch at the point uncovered. A tongue-depressor should also



FIG. 48.

be handed to the surgeon. A basin into which the patient can expectorate the pus which flows into his mouth and some warm antiseptic mouth-wash (such as permanganate of potassium) should be at hand.

*Uvulectomy.* For the removal of an elongated uvula either special scissors (Fig. 48) in conjunc-

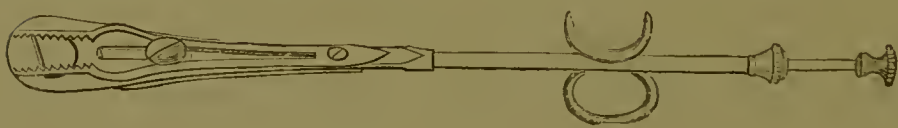


FIG. 49.

tion with a pair of long, bent forceps, or a cold or galvano-cautery snare, or one of the numerous special uvulatomes (Fig. 49) may be used.

These small operations may be done under cocaine or eucain anæsthesia. Often the tonsils are removed at the same time as post-nasal adenoid growths under a general anæsthetic. In these small manipulations,

especially in tonsillectomy, the nurse may be asked to steady the patient's head. In doing so she should cover the hair with a towel, and, standing directly behind the patient, rest the head firmly against her chest, steadying it by placing her hands on either side, the wrists resting on or just behind the ears, so that the patient is not prevented from properly opening the mouth. When tonsils are to be removed she will greatly assist the operator by pressing them inwards. This is done by placing the fingers just behind the jaw, and pressing gently but firmly inward and slightly upward. With very small children she must hold them as immovably as possible, and should prevent them from kicking or seizing the operator's hands. The best method of doing so is as follows : the child is seated upon the nurse's lap and its legs held firmly between the nurse's knees. The latter's right hand holds the child's wrists, while her left hand, placed upon the little one's forehead presses the head firmly against her shoulder. By this means the patient is rendered immovable and practically helpless.

The nurse should have at hand a porringer or small basin into which the patient may expectorate, and some warm, weak solution of permanganate of potassium with which he can wash out his mouth. She should prevent the patient from hawking or violently expectorating.

*Removal of Growths.* Small innocent growths on the tonsil, soft palate, or uvula are not common and are usually easily removed by scissors and forceps through the mouth.

The most common new growths of a malignant nature affecting the tonsil are Sarcoma and Epithelioma. They are usually of great malignancy, the glands becoming early affected and it is owing to this fact that the failure of operations on the tonsil is due. The disease usually proves fatal within a year, sometimes even within six months of its first appearance, and few of its victims survive for more than three-quarters of a year.

Operations for the removal of such growths are done through the mouth or externally through the neck. In the former method it is usually necessary to split the cheek from the angle of the mouth backward, and the following instruments should be prepared: gag, scalpel, Spencer Wells' forceps, ligatures, retractors, scissors, dissecting forceps, sharp spoons, periosteal elevator or blunt dissector. Paquelin's cautery, needles and sutures, sponges on handles.

The operation through the neck is done by several different methods, some of which are preceded by a preliminary tracheotomy. The instruments required will probably be: scalpels, scissors, Spencer Wells' forceps, dissecting forceps, jaw saw, retractors, periosteal elevator, ligatures, needles and sutures, instruments for wiring the jaw, sponges, etc.

These operations are, of course, serious ones, and the nurse's duties at the operation will be more of the nature of those of the general surgical nurse.

Passing now to the larynx, one of the most frequent procedures the nurse will witness is the



injection of fluids into that organ. Beyond the fact that she should know a laryngeal syringe (Fig. 50)

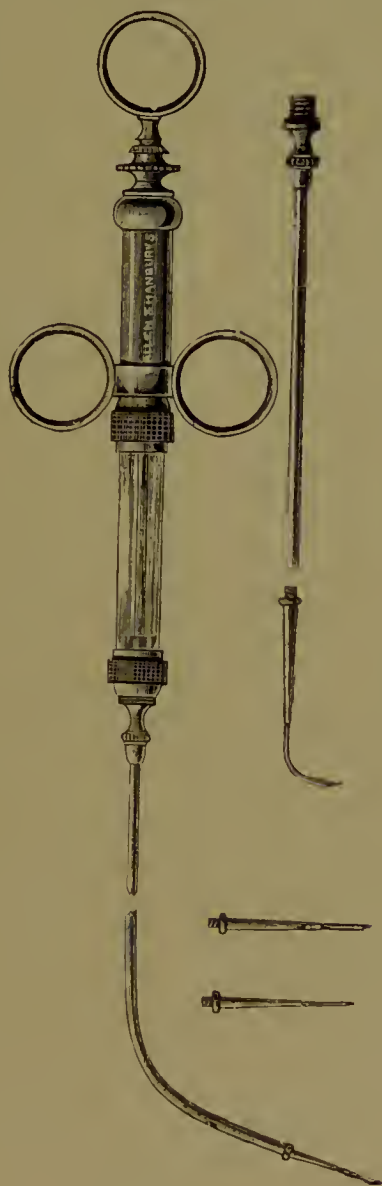


FIG. 50.

when she is asked for one, this proceeding will not concern her.

In the treatment of laryngeal tubercle portions of morbid tissue are frequently removed by means of various currettes and cutting forceps. These present many different patterns, with which the nurse will only become conversant by actual ocular experience. Beyond thus mentioning them nothing will be gained by any further allusion to them. As regards the removal of morbid tissue and growths, the nurse should always see that there are bottles prepared for the preservation of specimens. This applies equally to the nose and ear; the bottles should contain such preserving fluids as the surgeon may prefer.

Operations upon the larynx are not of such a nature as to require much assistance on the part of the nurse; even the instruments and their selection would usually be undertaken by the surgeon himself. In such operations as laryngofissure, subhyoid pharyngotomy, removal of foreign bodies, partial or complete extirpation of the larynx, etc., this is especially the case, and the nurse's duties will be the same as in any ordinary general surgical procedure.

The intra-laryngeal operations (performed through the mouth), are not likely to call for more service from the nurse than the steadying of the patient's head and the arrangements for the patient's comfort immediately afterwards. The operations include the removal of small growths, the removal of some foreign bodies, curretting laryngeal ulcers, the application of lactic acid or other drugs to the larynx, etc.

Although, as has been said, the part played by the nurse in the larger and more serious operations, such as excision of the larynx, will be a very minor one during the operation, yet she will be an individual of some importance during the after-treatment, and it will add a little to her interest in the case if a few words are said as to the nature of these operations.

Growths which cannot be removed through the mouth, or large, rough, or sharp-cornered foreign bodies, may be reached by means of a cutting operation from the outside. A word first as to such foreign bodies: they may be removed by a vertical incision splitting the larynx, from which, thus laid open, the intruder can be easily picked with forceps.

The operations for new growths are usually preceded by tracheotomy. *Thyrotomy* consists of dividing the larynx exactly in the middle line, holding it wide apart and then removing the growth. The instruments needed for this proceeding are: tracheotomy instruments, Hahn's tampon tracheotomy tube (Fig. 51), scalpels, stout knife for dividing the cartilage, bone forceps, saw (the last two named may be necessary where the cartilage is very hard or calcified), hooks, forceps, Spencer Wells' forceps, scissors curved on the flat, silver sutures for the cartilage, needles and sutures, ligatures, etc. Chromic acid should be at hand, and a solution of cocain or eucain should be ready for the surgeon to paint the larynx with when it is open in case the reflex excitability is sufficient to interfere with the

proper removal of the growth. The galvano-cautery should also be prepared.

*Partial and Complete Laryngectomy (Excision of the Larynx).* These operations are preceded by a preliminary tracheotomy, which is sometimes done a week beforehand. The instruments necessary will

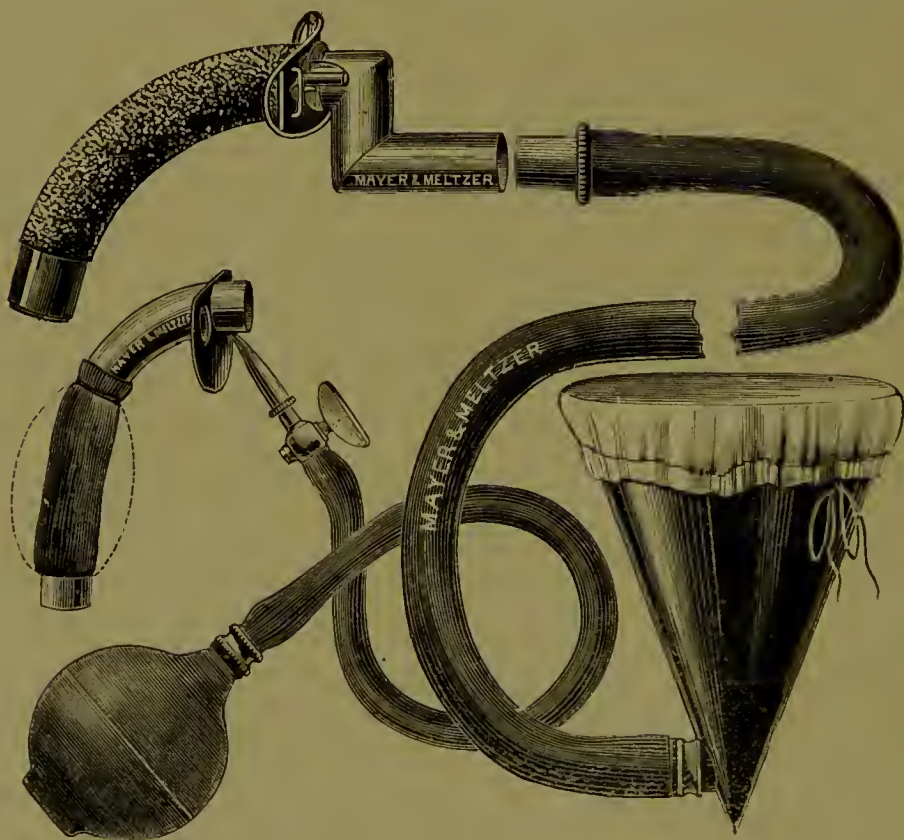


FIG. 51.

be: scalpels, tampon-cannula (Hahn's or Tendelenburg's, Fig. 51), periosteal elevator, scissors, cutting forceps, retractors, forceps, Spencer Wells' forceps, sharp hooks, sutures, needles, ligatures, sponges, etc.

*Subhyoid-pharyngotomy.* This useful operation is also preceded by tracheotomy and the introduction

of a Hahn's tampon tube. It consists of exposing the pharynx by an incision across the neck horizontally and parallel to the lower border of the hyoid bone. The instruments required will be : scalpels, forceps, retractors, scissors, Spencer Wells' forceps, needles, sutures, ligatures, etc.

We now pass on to *Operations on the Thyroid Gland*, which consist chiefly of complete or partial removal of that body. These operations are characterised by very great hæmorrhage and the nurse, in preparing for them, should remember this and see that the number of sponges, swabs, and artery forceps got ready is more than usual. The instruments to be put out are : scalpels, blunt dissectors, dissecting forceps (two pairs), plenty of Spencer Wells' forceps (at least two dozen pairs), retractors (small and also broad, flat ones), scissors, aneurism needle, ligatures (a large supply), needles and sutures. Tracheotomy instruments should be at hand in case of need.

The *removal of Glands* in the neck. The instruments necessary for this operation are : scalpels, blunt dissector, scissors, forceps, Spencer Wells' forceps, ligatures, needles, sutures. Plenty of swabs should be prepared.

In all these operations the nurse should see that several towels wrung out in 1 in 20 carbolic solution are prepared and that there is also ready a small round pillow which can, if necessary, be placed under the patient's neck.

Directions as to the preparation of the bed, hot-water bottles, etc., are scarcely needed, as the reader



will probably have been instructed in such matters in her training as a surgical nurse.

In concluding this chapter a few words on the operation of *Intubation of the Larynx* will not be

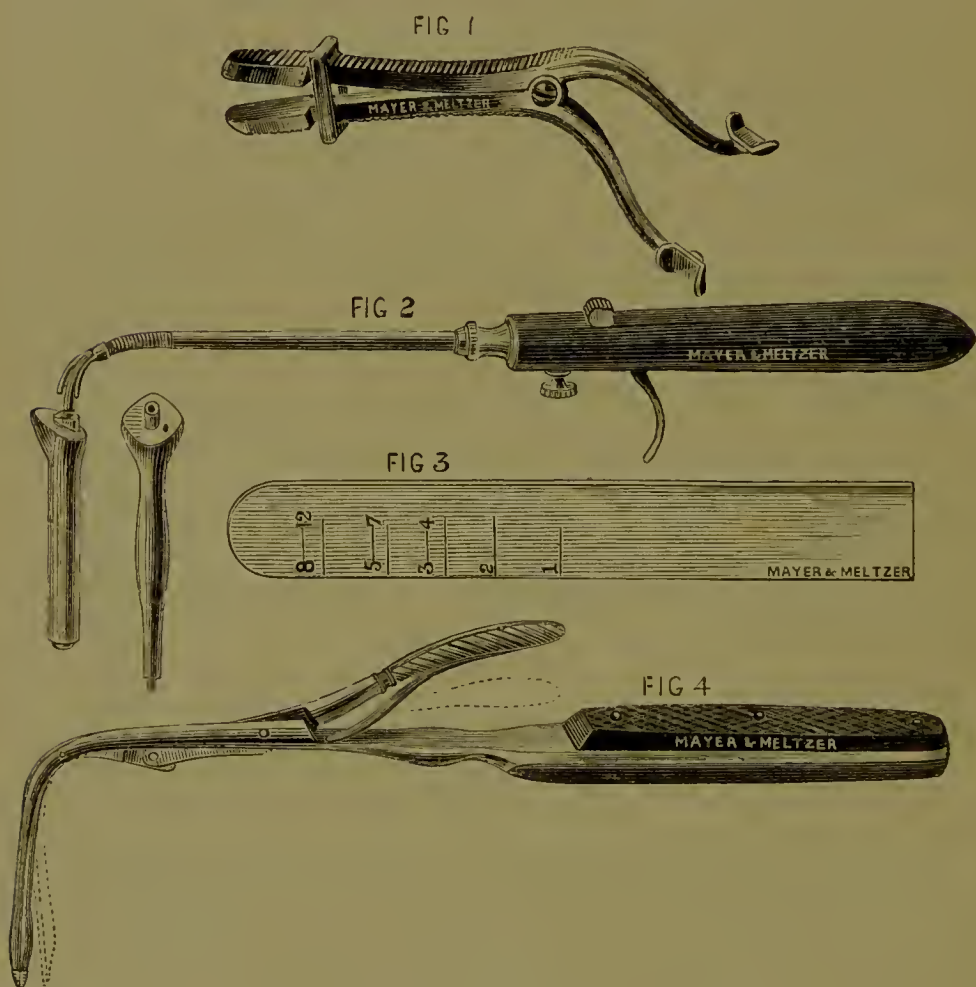


FIG. 52.

amiss, although many nurses will have already witnessed it in the wards of the general hospital in which they have been trained. O'Dwyer's tubes and the instruments for their insertion and extraction should be (and probably are) well known to the



reader (Fig. 52); if not, she should lose no opportunity of seeing them. For intubation the child should be firmly wrapped up in a light blanket, the arms being inside, and held sitting upright upon the nurse's lap. It is best to let the child sit well back, so that its back can be held firmly against the nurse's chest, whilst the latter steadies the little head against her shoulder with one arm. If the nurse's other arm be passed round the patient's body and the latter's feet be held fast between her knees and legs, the child should be powerless to move whilst the surgeon is doing his work. The mouth is held open with a gag by an assistant. The introduction of the tube by a skilled hand does not occupy more than fifteen seconds. In extracting the tube the patient requires holding firmly in the same way as for its introduction.

Speaking generally, the duties of the nurse in the surgery of the throat are of more importance in after-treatment than during the operation.

## CHAPTER X.

### THE AFTER-TREATMENT OF OPERATIONS ON THE THROAT.

THE after-treatment of cases in which the *galvano-cautery* has been applied to a granular pharyngitis is simple. The patient should take only bland, cold food for a day or two and should avoid smoking, spirits and all hot, spiced foods. If any extensive burning has been done, and much discomfort is complained of, the sucking of ice will give much relief, or a cocain pastille may be used occasionally. A simple saline or alkaline cleansing spray may be used for a few days after the cauterisation, which is generally healed in a week or less. These remarks apply also to the after-treatment of cases in which the lingual tonsil has been cauterised. As a matter of fact the after-treatment of such cases is left to the patient in his own home and the nurse has nothing to do with it, but these instructions have been given because they are things which the special nurse ought to know and in some institutions where a large number of patients are seen it may possibly be sometimes left to the nurse to tell cases that have been cauterised what to do.

*Retro-pharyngeal Abscess.* The after-treatment of cases in which a retro-pharyngeal abscess has been evacuated from the outside will be like that of any other operation on the neck ; there is, however, a danger which must be sharply watched for, and that is the possible occurrence of œdema of the glottis. Ordinarily the patient may suck ice, if he is old enough, and hot applications may be made to the neck and submaxillary regions. The nurse will take her instructions from the surgeon as to these applications. As œdema of the glottis is a very dangerous complication of some diseases of or operations on the throat and larynx, it would be as well for the nurse to have some acquaintance with it. In some Throat and Ear Institutions the house-surgeon is a visiting officer and not a resident, so that with some cases the nursing staff has considerable responsibility in after-treatment, etc., and a nurse may have to act promptly whilst the house-surgeon is being sent for.

(Edema of the glottis consists of an acute inflammation of the larynx attended with much exudation and consequent swelling of the tissues, so that the entrance of air is greatly obstructed by the enormously swollen parts around. The result is that respiration becomes greatly embarrassed and the patient is in danger of asphyxia. The nurse who has been trained in a general hospital will be almost sure to have seen cases of acute inflammatory œdema of the larynx, since children suffering from it as a result of trying to drink from a kettle spout are common as patients.

Naturally, œdema of the larynx is a trouble requiring immediate treatment. Should it occur, the surgeon should be at once sent for, and it may be said here, once for all, that whenever a case shows signs of laryngeal obstruction (no matter what the cause) it is the nurse's duty to *at once* send for the surgeon, as in all probability only his aid can be of use and treatment must be prompt to be effectual. Meanwhile the nurse should do what she can by applying ice-bags or one or two leeches to the larynx externally. A steam bed should be prepared, and intubation and tracheotomy instruments got

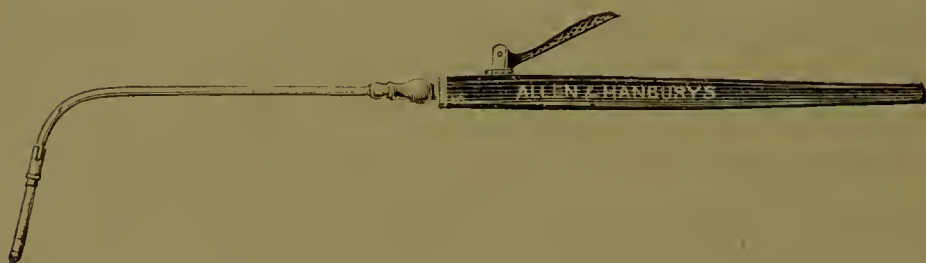


FIG. 53.

ready at once. Laryngeal œdema is treated by the surgeon either by scarifying, intubation or tracheotomy. For scarifying either a special instrument, such as Mackenzie's laryngeal lancet (Fig. 53), or an ordinary sharp-pointed, curved bistoury, protected with a piece of india-rubber drainage tube as described in Chapter IX. may be used if no better instrument is at hand.

*Ludwig's Angina.* The after-treatment of an operation for this condition is highly important and the patient's life may depend upon careful nursing. After incisions have been made frequent hot boracic

fomentations will be required; the patient must be made as comfortable as possible; a watch must be kept for signs of laryngeal obstruction, and, above all, the feeding must be attended to most carefully. The temperature and pulse must be noted frequently, as the surgeon has to watch for septic intoxication and for symptoms warning him of heart failure. The patient's strength must be kept up by plenty of nourishment and by brandy.

*Tonsillectomy.* The after-treatment of removal of the tonsils is one of common sense. Much of what has already been said of the after-treatment of operations for post-nasal adenoid growths (Chapter VI.) applies here. It is certainly wiser to confine the patient to the house for a day or two after the operation, and to keep him in a warm and equable temperature. In so doing, however, the necessity for pure air should not be lost sight of, for when a patient is ordered to be kept in a warm room, those who have charge of him too often seem to consider that the order means confinement to a hot, stuffy chamber, in which ventilation and fresh air are conspicuous by their absence.

For the first few days the food should be of a soft, bland character (see below, causes of hæmorrhage after removal of the tonsils). A mild antiseptic gargle or spray may be used, and to minimise the pain of swallowing a cocain lozenge or pastille should be sucked before taking food. Pain may be relieved by sucking ice or a cocain lozenge.

Much has been said or written as to undue hæmorrhage after tonsillectomy. Dangerous

hæmorrhage is rare if proper precautions have been observed. According to one writer who has reviewed the literature upon the subject, the causes of hæmorrhage after the removal of hypertrophied tonsils are :—

1. Abnormal distribution of the blood-vessels of the tonsils.
2. Hæmophilia (the so-called hæmorrhagic diathesis).
3. Over-use of the voice.
4. The too early eating of solids.
5. The recorded cases of severe hæmorrhage have occurred very frequently after the use of the bistoury.

When severe after-hæmorrhage occurs it is nearly always in adults. It will be noted that the too early eating of solids is given as a cause of this complication ; the nurse who has charge either of cases of removal of tonsils or of an out-patient department where that operation is often performed, will do wisely to impress upon the patients the necessity of adhering to a soft diet for several days after the tonsils have been removed.

Should the nurse find herself with a case in which hæmorrhage has occurred after tonsillectomy, she should, if it be very copious or does not quickly cease, send at once for the surgeon. Should the bleeding be slight, quiet and ice to suck may be sufficient to stop it. But if it be persistent, a mixture of one part of gallic acid to three parts of tannic acid dissolved in water may be applied by means of a swab to the bleeding parts, or the same



powder may be made into a paste and rubbed on to the tonsil with the finger.

Should, however, the bleeding be copious and sudden, the nurse requires to act promptly. If she understands how to compress the common carotid artery she should do so, or she should open the patient's mouth, thrust her finger on to the bleeding part, and press outwards against her thumb placed outside behind the angle of the jaw. She can thus at least control the hæmorrhage until the arrival of the surgeon, who may require to seek for, seize and twist with torsion forceps the bleeding point, or touch it with cautery; failing which it has in some cases been necessary to proceed to ligation of one of the carotid arteries.

*Compression of the Carotid Artery.* The line under which the common carotid artery lies is one drawn from just beneath the ear to the joint between the breast-bone and the collar-bone, the artery being just under the front edge of the sterno-mastoid muscle. The artery can be compressed by inserting the fingers beneath the sterno-mastoid and pressing directly backward; in doing so the palm of the hand is best rested on the muscle and the thumb directed to the back of the neck, so that it may give some point of resistance towards which to compress. The manipulation is always a somewhat painful one.

*Peritonsillar Abscess.* After the incision of a peritonsillar abscess the treatment will be much the same as that already described for other operations about the tonsil. Frequent gargling with a warm

antiseptic solution should be practised, together with the use of cocain pastilles, soft, unirritating foods, etc.

*Uvulectomy.* After the removal of the uvula, soft, bland, and cold food should be taken and a cocain lozenge sucked before meals to minimise or abolish any pain on swallowing. Very occasionally removal of the uvula is followed by secondary hæmorrhage. Should this occur, it will do so about three days after the operation. A styptic gargle should be used in such cases, one of tannic and gallic acids being very useful.

*Removal of Growths of the Tonsil.* The after-treatment of small, innocent growths from the tonsil uvula or soft palate will be slight and the directions given for tonsillectomy and uvulectomy will apply equally here.

After removing large malignant growths by one of the external operations spoken of in Chapter IX., the chief points in the after-treatment lie in the feeding and dressing of the patient. The dressing will be in the hands of the surgeon. The feeding will probably have to be carried out during the first four or five days by means of nutrient enemata and suppositories and later by the stomach tube. When the lower jaw has been divided the patient must not be allowed to talk. The nurse's part will naturally be a subordinate one and guided by the principles of general surgical nursing.

Passing now to the after-treatment of the more serious *operations on the larynx*, the nurse will in all probability have gained some experience therein

whilst training at a general hospital, especially if the institution to which she was attached has been a large one. *Foreign bodies* in the larynx may be dismissed at once ; if an operation such as subhyoid pharyngotomy, tracheotomy or thyrotomy has been required for their removal the after-treatment of those operations should be consulted. After removal of a foreign body by the natural passages has been effected some care is of course necessary, and the surgeon will make known his wishes in the matter.

The after-treatment of radical operations upon the larynx, especially those performed for malignant disease of that organ, was, up to a recent period, exceedingly troublesome and difficult to both patient and operator, and requires undivided and unremitting care and attention on the part of the nurse. The former method was to leave the tampon cannula *in situ* for twenty-four hours after the operation, and then to substitute an ordinary tracheotomy tube covered with indiarubber for several days up to one week. The interior of the larynx was plugged twice daily with iodoform gauze up to the fifth or sixth day, when this packing was done only once a day. For the first three or four days feeding was effected by means of a soft œsophageal feeding tube. The comfort of the patient was conspicuous by its absence, the plugging with iodoform gauze giving rise to much irritation with violent and incessant coughing. By the introduction of Mr. Butlin's method of procedure in 1893 the great discomforts to which patients were formerly subjected have been greatly modified. The tampon tube is now removed

at once, and no tracheotomy tube substituted. This is decidedly one of the most important changes, as it was almost impossible to keep the tampon cannula aseptic, a fact which seriously contributed to the occurrence later of septic complications. The patient is no longer propped up in bed, but lies quite horizontally, with one small pillow only under his head. He lies on the side (in partial laryngectomy) corresponding with the half of the larynx which has been the seat of operation, in order to allow the secretions from the wound to run out directly into a small pad of iodoform gauze. The wound is covered with a bandage of similar material. The nurse removes this bandage of iodoform gauze as often as it becomes saturated with secretion. The wound is also frequently dusted with a mixture of iodoform and boric acid.

The question of feeding is, of course, one of the very greatest importance. As a rule, even on the first day, the patient will be able to take a little liquid nourishment by the mouth. The precaution should, however, first be taken of giving him a little water through a suitable feeder, and, should it come through the wound, he must be fed by nutrient enemata or suppositories or by a stomach pump. Sir Felix Semon points out that a very good plan is to let the patient lie sideways with his body partly over the side of the bed, head downwards, and to let him drink from a feeder introduced into the lower lying side of his mouth; by this means the fluid that he drinks completely avoids the larynx, and thus no cough is excited.

Of course he should not be allowed to attempt talking until the surgeon has signified that he may do so.

The great risks of these radical operations upon the larynx lie in the occurrence of bronchitis, pneumonia, and other septic sequelæ ; these usually occur in the course of the first week. They are mentioned here because their avoidance not only depends upon the strictest antiseptic precautions during the operation, but upon the unceasing attention which the patient receives during the first few days of convalescence. In uncomplicated cases it has happened that patients have been able to get up the fourth day after thyrotomy, and to leave the house on the twelfth day. It is to the improvements which have been introduced of recent years into both the method of operating and the after-treatment that the rate of mortality of these radical operations has so much improved.

The temperature of the room must be kept from 65° to 70°, and some surgeons prefer to keep the inspired air charged with antiseptic vapours by means of a spray or steam kettle.

*Operations on the Thyroid Gland.* The patient from whom a whole or part of the thyroid gland has been removed requires the most careful attention. For the first few hours after the operation syncope is to be feared, and for this the head should be lowered, and injections of ether or brandy given. Owing partly to the copious hæmorrhage which takes place during the operation and partly to the nature and relations of the gland which has

been wholly or partly removed, syncope may require to be met by transfusion and the requisites for the addition of fluid to the circulation should be kept always ready for the first forty-eight hours. The best method of doing this quickly is by means of a large funnel and indiarubber tubing, the fluid being salt solution. The funnel, tubing and cannula should be kept aseptic and ready, together with a scalpel and forceps for the incision and exposure of a vein. The amount of fluid required to be thrown into the circulation is about two and three-quarter pints. It should be a  $\frac{3}{4}$  per cent. solution<sup>1</sup> of common salt (chloride of sodium) in distilled water heated to blood-heat.

When the operation is finished the wound is carefully dressed as follows: elastic pressure is made, either by means of two or three aseptic sponges well wrung out, or by pads of aseptic gauze. Over these some gauze slips are placed, and then gauze bandages, so as to get firm, even pressure, distributing any discharges evenly through the dressings. Other gauze dressings are then applied. The patient is placed in bed and the head carefully steadied with sand-bags. For the first few days after a thyroidectomy great care must be taken to keep the dressings securely in position. The neck being so movable a part and not admitting of compression this is especially difficult. The best method is to pass the gauze bandages under the axillæ below, and, above, to wind them over the chin and forehead. All points liable to friction

<sup>1</sup> Nearly two drachms to the pint.



should be carefully packed with antiseptic wool, and doubtful parts made additionally secure by one or two stitches.

Owing to the difficulty of providing adequate drainage, septic cellulitis leading to purulent collections in the mediastinum has to be guarded against ; perfect asepsis or antisepsis will alone be sufficient.

*Removal of Glands from the Neck.* The first dressings having been carefully applied, the wound should not be uncovered for five or six days unless there are decided indications for doing so. The remarks as to bandaging after operations upon the thyroid gland will apply here. As tuberculous glands are excised in order, amongst other reasons, to avoid disfiguring and extensive scars, it is of importance to obtain healing by first intention and therefore immobility, as far as possible, of the neck should be aimed at. This can be attained by steadying the head by sand-bags or, in very restless patients, applying a leathern collar such as is used for caries of the cervical vertebræ, and which takes a fixed point on the shoulders below and bears up efficiently the jaw and back of the head above.

*Intubation.* As regards intubation there are certain accidents to be guarded against. The larynx and trachea soon become tolerant to the tube, and the urgent dyspnœa for which the intubation was performed being relieved, the patient usually drops into a comfortable sleep. As a matter of fact, the intubation tube is worn much more comfortably than a tracheotomy tube and when *in situ* is often not felt at all by the patient.

The accidents to be guarded against are as follows : the tube may be coughed out, with an immediate return of the dyspnœa. This is a rare occurrence, but should the nurse experience it she should send for the surgeon without delay, and make no attempt to reinsert the tube. The tube may become blocked with false membrane, an accident that can only occur in a very feeble patient, as the tube is always expelled by a vigorous cough when it becomes blocked.

## CHAPTER XI.

### LARYNGOTOMY AND TRACHEOTOMY AND THEIR AFTER-TREATMENT.

TRACHEOTOMY is one of the emergency operations of surgery, and the nurse should therefore know not only something about it and its indications but she should possess as good a knowledge as she can obtain of its after-treatment. Owing to its importance a special chapter has been devoted to it and to its brother operation of laryngotomy. Tracheotomy is an operation which may be to the surgeon the easiest or the most difficult. In an adult, quiet under good anæsthesia, it is as plain, straightforward and easy as any operator could wish ; but in a child, fat and short of neck, with the larynx jumping up and down and the veins engorged by impending asphyxia, it may be one of the most difficult of operations, especially when done at night and with bad illumination.

*Laryngotomy* had better be taken first. In this operation a tube is inserted through an opening made in the crico-thyroid membrane (see Chapter III., "The Anatomy of the Larynx"). It is performed in preference to tracheotomy on account of the greater facility with which it can be done in cases of emer-

gency, and in those in which the wearing of a tube can quickly be dispensed with. It is not, however, applicable before adolescence. The instruments necessary are very few ; indeed, in cases of sudden emergency the operation has been done with a pen-knife and a quill toothpick. When it is done in a leisurely manner as a preliminary to some other operation, the patient is anæsthetised, and the head thrown back over a small pillow to make the front of the neck prominent. The instruments prepared



FIG. 54.

should be : scalpel, forceps, Spencer Wells' forceps, retractors, sharp hook, laryngotomy tube. The laryngotomy cannula (Fig. 54) is oval in section and much shorter than the tubes used for tracheotomy. It should be provided with tapes for securing it.

*Tracheotomy.* Above almost all other operations tracheotomy is one of haste and emergency, may be done in hospital at any hour and at a moment's notice and needs the most careful and efficient nursing if it is to be successful.

*The Indications for Tracheotomy.*

Tracheotomy may be rendered necessary whenever death threatens from laryngeal obstruction which is not at once amenable to other treatment. It may therefore be required in the following conditions:—

1. Diphtheria.
2. Syphilitic and tuberculous ulceration.
3. Malignant disease of the larynx.
4. Acute laryngitis (especially in œdema of the glottis).
5. Certain spasmodic affections, *e.g.*, tetanus, spasm arising from the pressure of a thoracic aneurism.
6. Foreign bodies in the air-passages.
7. As a preliminary to other operations.

The preparation of the patient, when such is possible, does not differ from that for other operations as a rule, tracheotomy being done for an emergency, no preparation, or a very hurried one only, is possible.

The cases which the nurse sees most of and has most to do with are the diphtheria ones, and it is important that she should have some knowledge of when tracheotomy is needed in these cases and when to send for the surgeon, during whose coming she should try and prepare for the operation. The symptoms which should make the nurse summon such assistance are as follows: when the breathing is becoming laboured, the voice harsh, the cough brassy and bell-like in note, the eyes lustreless and

the whites of a reddish colour, the lips blue, and most important of all, when with each breath the ribs lift and the sides of the chest become depressed and tucked in.

### *The Operation.*

Tracheotomy means the opening of the trachea, or windpipe, in order to form a new passage (which may be temporary or may have to be permanent) for the patient to breathe through, and the insertion of a tube into the trachea to keep that opening



FIG. 55.

patent. There are two forms of the operation, the "high" and the "low". In the former the trachea is opened above, in the latter below the isthmus of the thyroid gland, which crosses it opposite the second and third of its cartilaginous rings. The "low" operation is the more difficult, because the trachea there lies more deeply. The instruments required (which the nurse may have to put out) are as follows: scalpel, dissecting forceps, Spencer Wells' forceps (several pairs), blunt hooks, sharp hook, director, tracheal dilator (Fig. 55), ligatures, sutures, needles, scissors, tracheotomy tubes, red rubber catheter and syringe attached (to suck any fluid out



of the trachea), absorbent wool swabs for sponging. Antiseptics and hot water as usual. Should the nurse have to arrange the operating table, she should see that a small narrow pillow is at hand to place beneath the patient's neck.

Of the operation itself it would be out of place to speak here, but a useful caution is necessary when it is performed for diphtheria, namely, both operator and nurses should always stand aside at the moment the trachea is opened: its contents may be ejected

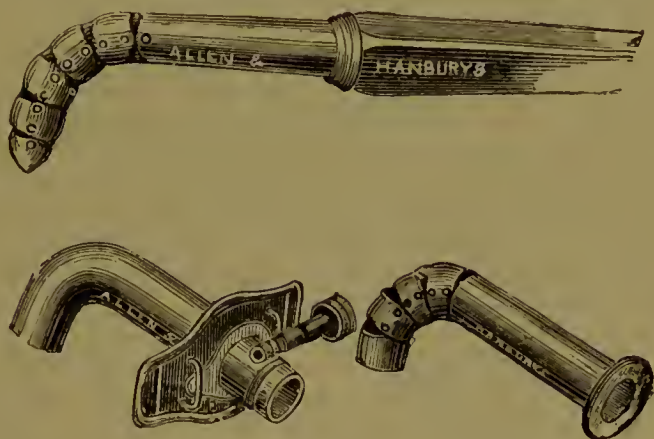


FIG. 56.

with much force, and diphtheritic infection may thus be incurred by direct contact. When the nurse and the surgeon have to do tracheotomy on a child together—in private and in the middle of the night, for instance—the former can be a most valuable help to the latter by holding the patient. He should be wrapped up in a sheet, so that by pinning that covering both hands and limbs can be restrained. The neck should then be bared and the head held *absolutely* straight, so that the chin is in exactly the

same straight line as the cleft at the upper end of the breast-bone between the two collar-bones. The head should at the same time be pulled back over a small, round pillow or over one of the nurse's arms. Absolute steadiness of the patient's neck is essential.

The nurse should learn something of the tracheotomy tube and its different forms. Tracheotomy tubes consist of an outer tube attached to a shield and an inner tube. The best tubes are those of



FIG. 57.

Durham (Fig. 56), Bryant (Fig. 57), and Parker (Fig. 58). The nurse should see these tubes and become conversant with the special features of each. Durham's tube possesses an inner cannula, which is jointed lobster-tail fashion, and is provided further with a lobster-tail "pilot" on a handle. Parker's tube is angular, and much to be preferred on anatomical grounds; those tubes which are curved rather than angled are liable to impinge with their

lower extremity on the anterior wall of the trachea, thus tending to produce ulceration there; such a bad-shaped tube is the one known as Fuller's (Fig. 59). At either side of the shield are slits for tapes, which must be long enough to tie comfortably round the patient's neck without producing any constriction, and should be ready threaded on the tube before the operation.



FIG. 58.

*After-treatment.*

The future of a tracheotomy case depends very largely upon careful nursing, and the nurse who is put on such duty must keep continually before her mind the great responsibility committed to her charge. It is best that there should be two nurses to relieve each other, for the patient cannot, without

danger, be left for a moment alone. Expectoration must be encouraged, and to some extent this is done by keeping the atmosphere of the room moist. Sudden obstruction of the tracheotomy tube is most often due to inspissated mucus and not to diphtheritic membrane; this thick mucus is secreted usually about twenty-four hours after the operation, and after three or four days the discharge becomes thinner and more puriform. In order to keep the patient in a warm, moist atmosphere most surgeons prefer the tent, but some operators are of



FIG. 59.

opinion that the unvarying rule of cot-tenting and the use of steam is disadvantageous. It must be remembered that children suffering from membranous laryngitis are in a weakly condition, and consequently semi-complete seclusion with so little admission of air tends to complete the asthenia and sepsis. Some therefore prefer to have the patient in a bed screened from draughts, using steam if needful. A tent, when required, can be readily improvised by fastening four vertical pieces of wood to the corners of a cot, connecting them by four

horizontal pieces, and throwing a sheet over all. One side of the cot is left partly uncovered to allow of the entrance of steam from a steam kettle. Large clothes-horses can also be used round the bed. A uniform temperature of  $65^{\circ}$  to  $70^{\circ}$  Fahrenheit should be preserved, and all draughts carefully avoided. The nurse who has charge of the case should lay a double fold of fine gauze, wrung out of warm water (sterilised or antisepticised), over the mouth of the tracheotomy tube; this is to filter the air, and requires careful and constant watching in order that any clots, mucus or membrane when ejected may be at once dexterously brushed away. At intervals of about every twenty minutes the nurse should remove the inner tube and cleanse it; should it be coughed out during the intervals it should be carefully cleansed before it is reinserted. The cleaning may be done with warm carbolic lotion, but if the secretions dry and cling to it, it will be found that a warm solution of bicarbonate of soda (gr. v. to xx. to  $\text{ʒi.}$ ) will be the best to use. The lumen of the tube is generally cleaned with a feather—why a feather is the correct implement, one cannot say; probably it is a mere custom—and the feathers used for the purpose should be ordinary poultry wing feathers, carefully washed in carbolic, and with all loose parts removed, a precaution particularly necessary when the feather is to be used for cleansing the tube *in situ*. With regard to these directions as to cleansing, etc., I would impress upon the nurse that such manipulations are very easily overdone. A nurse should

endeavour, when engaged in the care of such cases, to be guided by her common sense. To sit by the side of a child and stuff feathers down its throat at intervals of from half to two minutes, varying the performance by extracting, cleansing and reinserting the inner tube every ten minutes and finally dropping off to sleep from the exhaustion consequent upon such incessant labour, is not the common-sense method of nursing a tracheotomy case. If the nurse will remember that she has to prevent the tube from becoming obstructed, that she must therefore exercise unceasing vigilance without exhausting the patient by meddlesome interference, that she must on no account allow herself to fall asleep, and that she must never, upon any pretext or under any consideration, remove the outer tube, she will be more than half-way towards competency to take charge of a case of tracheotomy. Another very important item is the feeding of the patient. What is to be given must be given regularly, gently and cleanly—not by any means always an easy task. It has been said very truly that no selfish or careless woman ought to nurse a tracheotomy case. Every time the patient wakes he must be fed. Often there is much difficulty in getting sufficient food taken on account of the pain in swallowing, the impairment thereof from the presence of the tube, etc., and the nurse will have to devote much time and patience to coaxing the child to take plenty of nourishment. Brandy and beef-tea may be given freely. Occasionally it is better to feed the patient at regular intervals with stated amounts by means of



an œsophageal tube ; this, however, will of course be seen to by the surgeon himself. At the end of twenty-four hours it is usual to change the outer tube. This is done by the surgeon, and the nurse should see that the new tube is placed ready for him, threaded with tapes, and a guide with it.

The thermometer, fire, and steam kettle (if used) must be carefully watched in order that the room be kept properly warm and moist.

Lastly, the nurse must see that, in all cases of diphtheria, every article that quits the room is thoroughly and completely disinfected. All swabs, folds of gauze, feathers, etc., that are used for the tracheotomy tubes should be at once destroyed by burning, and last, but often most difficult task of all, great vigilance must be exercised over the attentions of relatives and friends of the patient.

In concluding, a few words upon the subject of the nurse's duty to herself will not come amiss. Although instincts of self-preservation are with both surgeons and nurses subordinate to the safety of the patient, it is both wrong and foolish to incur risks that are unnecessary. In tracheotomy cases of diphtheria both doctor and nurse run grave risks of infection from the entrance into mouth, nose or eyes of fragments forcibly ejected from the tube. In cleaning and reinserting the inner tube, the head and face should be kept back and to one side so as to be out of reach if the patient coughs. One knows, too, how quickly a poor little child-patient endears itself to its nurse, but however fond that nurse may become, her tender heart should not

allow her to risk herself by kisses and caresses. Cases in which relatives and nurses have succumbed to the disease engendered by the "fatal kiss" are only too common.

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